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HISTORY AND EPIDEMIOLOGY OF TYPHUS FEVER

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There are medical historians who find evidence of the existence of typhus fever among the ancient Hebrews and their contemporaries, but this is a matter of conjecture. While this disease has long been known as morbus pauperum associated with want and famine, we must not infer that it is the only fever which develops and thrives among the needy and in times of scarcity of food and other privations. Poverty and overcrowding favor the development and distribution of many infections. Some of the cases reported by Hippocrates in his book on epidemics are certainly suggestive of typhus. The following is the report of a case, now believed to have been typhus, made by Hippocrates, as translated by Adams:

> In Thasus the wife of Dealces, who was lodged on the plain, from sorrow was seized with an acute fever, attended with chills. From first to last she wrapped herself up in her bedclothes; still silent, she fumbled, picked, bored and gathered hairs (from the covers); tears and again laughter; no sleep; bowels irritable, but passed nothing; when directed, drank a little; urine thin and scanty; to the touch of the hand the fever was slight; coldness of extremities. On the ninth (day) talked much incoherently, and again became composed and silent. On the fourteenth, breathing rare, large, at intervals; and again hurried respiration. On the sixteenth, looseness of the bowels from a stimulating clyster; afterwards she passed her drink, nor could retain anything, for she was completely insensible; skin parched and tense. On the twentieth much talk and again became composed; loss of speech; respiration hurried. On the twenty-first she died. Her respiration throughout was rare and large; she was totally insensible; always wrapped up in her bedclothes; either much talk or complete silence throughout. Phrenitis.

The great Athenian pestilence so well described by Thucydides was either typhus or the pneumonic form of the plague. Livy and Tacitus tell of many epidemics in the classical period of Rome. Some of these undoubtedly were epidemics of the plague, while the descriptions of others suggest typhus. The dark ages were so overshadowed by disease and superstition that medical records of value are almost wholly wanting. In the siege of Granada in 1489 no less than 17,000 of Ferdinand's soldiers died of a fever which was designated as "Tabardillo," on account of the spots appearing on the skin. This term is still one of the Spanish names for typhus. In the sixteenth century two Italian physicians, Fracastorius of Verona and Cardanus of Pavia, described typhus fever so plainly that there can be no doubt about the disease which then prevailed. In four years (1550-1554) more than one million people in Tuscany were destroyed by typhus. Fracastorius describes the disease as "Febris pestilens," and states that it was vulgarly known as "Lenticulae" or "Puncticula." He says from the fourth to the seventh day red eruptions appear on the arms, chest, and back. They resemble flea bites, only are somewhat larger. They also resemble lentils and from this comes the popular name. The most marked symptoms mentioned are great prostration, feeble pulse, injected conjunctivae, and low muttering delirium. Some are somnolent while others are excited and wakeful, while in still others these states alternate. The disease lasted from seven to fourteen days, rarely longer. The majority of those who were bled died and a supporting treatment proved best. Cardanus and other Italian physicians stated that many of the practitioners of the time mistook this disease for measles, and Massa of Venice wrote on the distinctions between the eruptions of this disease and those of measles and smallpox. About the middle of the sixteenth century this disease was widely prevalent in France and Coyttarus of Poitiers wrote a monograph on it, under the title "De Febribus Purparatis" and somewhat later Ambrose Paré, the distinguished surgeon, wrote of "febris pestilens" which was marked by eruptions resembling the bites of fleas or bed bugs.

Morbus Hungaricus appeared in the army of Maximillian II in Hungary in 1566, and soon spread over the greater part of Europe. Sennertus and others have left descriptions of this epidemic. The skin was marked by flea-bite eruptions. Headache was intense and followed by delirium. In some, the tongue became black, parotid abscesses developed and gangrene of the limbs occurred.

Under the title, "Febris maligna puncticularis seu peticularis," Castro of Verona (1580) pictured the symptoms. The pulse is small and weak; the tongue dry and black; the face and eyes greatly congested; delirium, followed by stupor deepening into coma; parotid abscesses in some, the eruption appearing about the seventh day and the disease continuing from fourteen to twenty days. Castro says that this disease was known to the French as "La Pourpre;" to the Italians as "Petecchie;" to the Spaniards as "Tabardillo," and to the Germans as "Fleckfieber."

During the sixteenth century typhus fever was so prevalent in the jails of England that the disease spread among the court officers when prisoners were brought before them for trial. This happened repeatedly and gave to court sessions the designation of "black assizes." The first of these of which record is left occurred at Cambridge in the thirteenth year of the reign of Henry VIII (1522). The justices, bai-

liffs, gentlemen and other persons in court were seized with a fever which proved fatal to many. The most notable report of a "black assize" is that at Oxford in the twentieth year of the reign of Elizabeth (1577). The prisoner was Rowland Jenks, a bookbinder and a Roman Catholic, who was charged with treason and profanity of the Protestant religion. He was sentenced to lose his ears. The trial was held at Oxford Castle, July 4. Several prisoners were brought into court in the course of the trial. The chronicle states that "an infectious damp of breath" spread through the room. "Above six hundred sickened in one night; and the day after, the infectious air being carried into the next village sickened there more than an hundred more." By the twelfth of August 510 persons perished. "The infection arose from the nasty and pestilential smell of the prisoners when they came out of the jail, two or three of whom had died a few days before the assize began." The disease was marked by loss of appetite, headache, sleeplessness, loss of memory, deafness and delirium, so that the victims behaved like madmen. The Catholics saw in this the scourge of God for the unjust punishment, and the Protestants attributed it to the "diabolical machinations of the Papists."

During the Thirty Years' War (1619-1648) the whole of central Europe was desolated by war, famine and pestilence. The nature of the epidemic is plainly shown by both medical and lay writers and its ravages were portrayed in both prose and poetry. One verse of a song runs as follows:

Per omnes
Burgundos et quas stagnans Arar irrigat urbes
Insolita exarsit febris, quae corpora rubris
Inficiens maculis (triste et mirabile dictu!)
Quarta luce frequens fato pendebat acerbo.
Pulsus erat minimus, tremulusque soporque
Mens vaga, visque labens; lotium crassumque rubensque
Interdum tenuae instar aquae.

In 1658, Morton states that England was one vast hospital filled with the victims of a fever with "maculae latae et rubicundae morbillis similes in toto corpore." The great plague of London (1665) was preceded, accompanied, and followed by typhus and some of the most eminent medical men of the time, notably Sydenham, frequently confounded plague and typhus in the reports of their cases. Under the title, "Febris Petechialis vera" Hoffmann of Halle (1700) gave an excellent account of typhus and pointed out its distinction from the plague, which he designated "Febris Pestilens." The eighteenth century saw no abatement of epidemics of typhus. This disease had long afflicted Ireland under the name of "Irish ague," but it was not until 1708 that permanent records of its ravages were made. From that time on for more than a century and a half Ireland was afflicted by one epidemic after another, just as fast as new generations supplied a crop of susceptible material. The historian has no difficulty in showing that each exacerbation was coincident with a period of great want and poverty, but this was a chronic condition of the Emerald Isle during this period. The people were oppressed by their rulers, divided among themselves, held in the grossest ignorance and fed on superstition. Most of those who had enough energy emigrated to foreign lands, thus impoverishing their native land of its best blood to such an extent that it has not yet wholly recovered. An account of one epidemic of typhus in Ireland is much like all others. Nothing to eat but potatoes; and an adult would devour ten or more pounds of these tubers each day in the vain attempt to supply his body cells with the minimum amount of protein demanded. Driven by hunger to sell the cow, furniture, and even his clothing, the Irishman and his family huddled together in rags and filth, while vermin fed on their bodies and simultaneously inoculated them with typhus. Murchison says: "In Dublin, the servants of the upper classes were not allowed potatoes, and bread was portioned out to them sparingly, few persons had more than a quarten loaf in the week. The poor pawned their clothes, and even their bedding for money to purchase food, and, as a natural consequence, it was common for several members of one family to sleep in the same bed." According to O'Connell, eighty thousand Irish died in 1740-1741 of famine and spotted fever and one-fifth the population of Munster perished. Writing of a nineteenth century epidemic of typhus in Ireland, Murchison says:

> Extreme distress ensued. The four pound loaf was sold in Dublin in 1817 for 1s, 9d; and the poor throughout Ireland are described as wandering about the country gathering nettles, wild mustard, and other weeds, to satisfy the cravings of hunger. . . . The probable population of Ireland at this time was, in round numbers, six million, and the number of sick was estimated at 737,000, or at about one-eighth. In Dublin alone there were about 70,000 cases, making about one-third the inhabitants.

Of the same epidemic Carleton wrote:

> People collected at the larger dairy farms waiting for the cattle to be blooded, so that they might take home some of the blood to eat mixed with a little oatmeal. The want of fuel caused the pot to be set aside, windows and crevices to be stopped, washing of clothes and person to cease, and the inmates of a cabin to huddle together for warmth. This was far from the normal state of the cottages or even of the cabins, but cold and hunger made their inmates apathetic. Admitted later to the hospitals for fever, they were found bronzed with dirt, their hair full of vermin, their ragged clothes so foul and rotten that it was more economical to destroy them and replace them than to clean them.

The roads were filled with infected vagrants and many a poor cottier not only divided what he had in alms, but by giving shelter to the wanderer introduced the infection into his humble home, while "the dogs of the gentry kept all beggars from their gates."

The last great Irish famine (1845-1848) was the occasion for the prevalence of relapsing fever and scurvy as well as typhus fever. This scourge was foreseen in the development of the potato blight and was mitigated somewhat by the repeal of the corn laws and by a change in the navigation laws permitting the carrying of food supplies in other than British bottoms. At that time Ireland lived almost exclusively on milk and potatoes. Although it produced more than enough grain to feed itself, even in these years of the potato blight, most of this had to be sent to England to pay the rents. Years before both Malthus and Cobbett had protested against a people trying to live so largely on potatoes. The former wrote as follows:

> When the common people of a country live principally on the dearest grain, as they do in England, on wheat, they leave great resources in scarcity; and barley, oats, rye and cheap soup and potatoes all present themselves as less expensive, yet at the same time wholesome means of nourishment, but when their habitual food is the lowest in the scale, they

appear to be wholly without resource except in the bark of trees like the poor Swedes; and a great portion of them must necessarily be starved.

After this famine the Irish ceased to rely so largely on the potato, emigration to this country and Canada greatly increased, and "the population has steadily declined and the well being of the people steadily improved."

Before dismissing the subject of Irish typhus epidemics, I wish to add a quotation from Creighton, showing that the case mortality in this disease is higher among the robust and well fed than among the weak and hungry. "There appeared to be a scale of malignity in the fevers in an inverted order of the degree of misery. The most wretched had the mildest fever, the artizan class or cottagers had typhus fatal in the usual proportion, the classes living in comfort had typhus of a very fatal kind. This experience, however strange it may seem, was reported by medical observers everywhere with remarkable unanimity. One says that six or seven of the rich died in every ten, others say one in three. Forty-eight medical men died in 1847 in Munster, most of them from fever; in Cavan County seven medical men died from fever in twelve months and three more had a narrow escape of death; two of the three physicians sent by the Board of Health to the coast of Connemara died of fever. Many Catholic priests died, as well as some of the established Church Clergy; and there were numerous fatalities of the resident gentry and among others who administered the relief. Yet a case of fever in a good home did not become a focus of contagion; the contagion came from direct contact with the crowds of starving poor, their clothes ragged and filthy, their bodies unwashed, and many of them suffering from dysentery. The greater fatality of fever among the richer classes (of course, with a much smaller number of cases) has been a commonplace in Ireland and is remarked by the best writers."

Creighton in his valuable "History of Epidemics in Britain" has shown some interesting facts concerning typhus in England during the eighteenth century. I will follow his facts but will draw my own conclusions.

During the half century from 1715 to 1765 England was most prosperous financially. Monied men built up great fortunes and the necessities of life were abundant and cheap. With two or three exceptions the harvests were rich and grain was exported in great quantity. Historians state that under the first two Georges there was general prosperity. Even Adam Smith speaks of "the peculiarly happy circumstances of the country during the reign of George II (1726-1760). Hallam speaks of this period "as the most prosperous that England had ever experienced." Lecky says:

> All the evidence we possess concurs in showing that during the first three-quarters of the century the position of the poor agricultural classes in England was singularly favorable. The price of wheat was both low and steady. Wages, if they advanced slowly, appear to have commanded an increased proportion of the necessaries of life, and there were all the signs of growing material well-being. It was noticed that wheat bread, and that made of the finest flour, which at the beginning of the period had been confined to the upper and middle classes, had become before the close of it over the greater part of England the universal food, and that the consumption of cheese and butter in proportion to the population in many districts almost trebled. Beef and mutton were eaten almost daily in the villages.

Johnson wrote:

> There every bush with nature's music rings
> There every breeze bears health upon its wings.

However, there were even at this time some who saw beneath the surface of abundance and prodigality. An economist, Rogers, pointed out that the prosperity was all on the side of the ruling classes and the capitalists, while the laborers were in "irremediable poverty and without hope." Their wages were artificially fixed by the quarter sessions and they were kept "in a condition wherein existence could just be maintained."

Creighton writes:

> But the Eighteenth Century, even the most prosperous part of it, from the accession of George I to the beginning of the Industrial Revolution in the last quarter or third of it, was none the less a most unwholesome period in the history of England. The health of London was never worse than in those years, and the vital statistics of some other towns, such as Norwich, are little more satisfactory.

In 1782, White wrote of the fever in London:

> The annual deaths under the old regime exceeded by a good deal the annual births; in the seven years, 1728-35, according to the figures in the parish registers, the burials from all causes were 3,488 and the baptisms 2,803, an annual excess of 98 deaths over the births in an estimated population of 10,800 (birth rate 37 per 1,000, death rate 46 per 1,000).

Creighton says:

> The mean annual deaths were never higher in London, not even in plague times over a series of years, the fever deaths keeping pace with the mortality from all causes, and, in the great epidemic of typhus in 1741, making about a fourth part of the whole. The populace lived in a bad atmosphere, physical and moral.

It is stated that the consumption of alcohol in London amounted to six gallons per head per annum. A duty of 20 shillings per gallon did not prevent the poor from getting it, and large quantities of gin were smuggled in from Holland. In 1726 the College of Physicians presented this matter to the House of Commons with the following statement:

> We have with concern observed for some years past the fatal effects of the frequent use of several sorts of distilled spirituous liquor upon great numbers of both sexes, rendering them disease, not fit for business, poor, a burthen to themselves and neighbors, and too often the cause of weak, feeble and distempered children, who must be, instead of an advantage and strength, a charge to their country.

The poor in London were crowded into small quarters. In 1737 one house was found to contain eleven married couples and fifteen single persons. A tax was levied on each window in the house and each window in the cellar, stairway and outhouse was counted and skylight included. "No window or light shall be deemed to be stopped up unless such window or light shall be stopped up effectually with stone or brick or plaster on lath."

Debtors were thrown into prison where some remained for years and if they had any comforts in the prison they had to pay for them. Jailers grew rich out of the necessities of their wards. Those unable to pay were crowded into unbelievably small quarters. The first commission to inquire into these abuses reported:

George's ward, sixteen feet by fourteen and about eight feet high, had never less than thirty-two in it all last year and sometimes forty; there was no room for all to lie down, one-half the number sleeping over the others in hammocks; they were locked in from 9 p. m. to 5 a. m. in summer, longer in winter, and as they were forced to ease nature within the room, the stench was noisome beyond expression.

It is a matter of common knowledge that the work of prison reform in England at the time of which we write was due largely to the efforts of John Howard and his work was begun in 1773.

While the great landowners accumulated wealth, the poacher who snared a rabbit was sent to jail or deported. The condition of the poor was hopeless and the best blood of England flowed willingly or unwillingly into the United States, Canada and Australia. However, typhus often pursued the poor emigrant in his flight by sea and it is said that one-third the immigrants to America in the eighteenth century died during or soon after the voyage. It is well known that the fatality from ship fever continued through the early part of the nineteenth century. During the American War (1774-1780) the number of British seamen raised was 175,990, the number of those who died of disease was 18,545, and the number killed was 1,243.

It is interesting to note that during the eighteenth century English physicians for the most part were not much concerned with the poor and many of them saw but little typhus, while a colleague busy among the poor saw much of it. A Dr. Moss, writing of diseases in Liverpool, said that typhus was rare at a time when Dr. Currie was seeing more than 3,000 cases a year. In 1790 Liverpool was the second city in England, with a population of 56,000, while that of London was estimated at 800,000. According to Currie 7,000 of the people of Liverpool lived in cellars and 9,000 more in back houses with small courts and with narrow passages to the streets. In ten years (1787-1796) 31,243 cases of fever were registered, an average of 3,124 per year. In the last quarter of the eighteenth century Chester was regarded as the most desirable residence city in the kingdom. Within the walls, it had a population of about 3,500 and from 1764-1773 the death rate was only 17.2 per 1,000, but the poor lived outside the walls and Haygarth describes the condition as follows:

> The houses were small, close, crowded and dirty, ill supplied with water, undrained, and built on ground that received the sewage from within the walls. The people were ill fed and they seldom changed or washed their clothes; when they went abroad they were noisome and offensive to the smell. . . . In these poor habitations when one person was seized with the fever, others of the same family are generally affected with the same fever in a greater or lesser degree.

The second half of the eighteenth century saw the great manufacturing development of England by the employment of machinery. Now the poor were exploited by the manufacturer. The houses occupied by the operatives are said by Ferrier to have been dirty, without ventilation, and with the beds almost touching. "As soon as one poor creature dies or is driven out of his cell, he is replaced by another, generally from the country, who soon feels in his turn the consequences of breathing infected air." The only voices heard in behalf of the poor were those of medical men, and in Manchester Ferrier pleaded for them in strong language:

> I have seen patients in agonies of despair on finding themselves overwhelmed with filth and abandoned by everyone who could do them any service. . . . The situation of the poor at present is extremely dangerous, and often destructive to the middle and higher ranks of society. . . . The poor are indeed the first sufferers, but the mischief does not always rest with them. By secret avenues it reaches the most opulent and severely revenges their neglect or insensibility to the wretchedness surrounding them.

It was the fact that typhus occasionally found its way into the midst of the rich, and, when it did, killed so many and so quickly, that they were compelled to recognize that the misfortunes of the poor were of concern to themselves. Finally in a half-hearted way, urged by physicians, growling about the wastefulness and improvidence of the laboring classes, driven by the occasional deadly outbreaks in their own ranks, the ruling classes began to provide special hospitals for the isolation and care of cases of typhus. The London fever hospital was established in 1802.

The epidemiologic history of Britain during the Napoleonic wars presents many points of interest. Food prices were high. For a time American markets were closed to British manufacturers. Still, the period (1803-1816) was comparatively free from typhus, so far as Britain was concerned. In peace the poor man's business is to serve the rich, clothe himself in rags, rear his family in a stye and eat nothing. In war he becomes a hero, the defender of his king and country. He is well clothed, well fed and all that is asked of him is that he die for his country if need be. The wife and children at home must be cared for because more soldiers will be needed.

Immediately after the declaration of peace (1816) typhus began to increase and within another year it took on epidemic proportions. The condition of the London slums of the time is shown by a Parliament report as quoted by Creighton:

> Calmel's Buildings, a small court near Portman Square, consisting of twenty-four houses, in which lived seven hundred Irish in distress and profligacy, neglected by the parish and shunned by everyone from fear of contagion. George Yard, Whitechapel, consisting of forty houses in which lived two thousand persons in a similar state of wretchedness.

In 1831 typhus became epidemic in England and continued its ravages for more than ten years. The destitution and sickness among the poor of Manchester in the latter part of this epidemic (1839-1841) formed the basis of the story of "Mary Barton" written by Mrs. Gaskell. The author dwells on the bitterness on the part of the poor.

> The most deplorable and enduring evil that arose out of the period of commercial depression to which I refer, was this feeling of alienation between the different classes of society. It is so impossible to describe, or even faintly to picture, the state of distress which prevailed in the town at that time, that I will not attempt it; yet I think again that surely in a Christian land, it was not known so feebly as words could tell it, or the more fortunate and happy would have thronged with their sympathy and aid. In many instances the sufferers wept first and then cursed. Their vindictive feelings exhibited themselves in rabid politics. And when I hear, as I have heard, of the sufferings and privations of the poor, of provision shops where ha'porths of tea, sugar, butter and even flour were sold to accommodate the indigent—of parents sitting in their clothes by the fireside during the whole night for seven weeks together, in order that their only bed and bedding might be reserved for the use of their large family—of others sleeping upon the cold hearth stone for weeks in succession without adequate

means of providing themselves with food or fuel—and this in the depth of winter—of others being compelled to fast for days together, uncheered by any hope of better fortune, living, moreover, or rather starving in a crowded garret or damp cellar, and gradually sinking under the pressure of want and despair into a premature grave; and when this has been confirmed by the evidence of their careworn looks, their excited feelings, and their desolated homes—can I wonder that many of them, in such times of misery, and destitution, spoke and acted with ferocious precipitation?

In 1847-1848 there was a revival of typhus, under the name of "Irish Fever," in England. The last epidemic in England occurred in 1863-1864, and was in part due to the "cotton famine" resulting from the civil war in our own country. Since that time typhus has gradually decreased in Britain, but has not entirely disappeared.

From the fact that I have dwelt on typhus in Britain, it must not be inferred that it was unknown or was less prevalent on the continent of Europe during the seventeenth, eighteenth and nineteenth centuries. It was constantly present and assumed epidemic proportions of varying intensity in diverse places at different times. No European nation has been wholly free from it and it has continued to develop epidemics, especially in Austria and Russia. The present war has developed the conditions most favorable to its dissemination and I shall not attempt to predict the part it may play in the savage struggle now going on.

Taking Europe as a whole, the period from about 1670 to about 1850 may be considered as the typhus age. This does not mean that this disease did not exist before this period or that it ceased with the close of it. Neither assumption would be true, but before that time typhus was overshadowed for many centuries by the more deadly plague. Still it is a question if even at that time typhus did not kill more than the plague. The former was constantly present while the latter lapsed from time to time apparently on account of lack of susceptible material. Even during the typhus age other deadly infections, as smallpox, tuberculosis, diphtheria, etc., aided in rolling up heavy mortality lists. A complete history of typhus would be a valuable contribution to human knowledge and should be studied by statesmen and all interested in the welfare of the race, as well as physicians. There is certainly one great lesson which it teaches and that is that the health conditions of the poor are of interest to all. No nation can be great so long as its laboring classes live under unhygienic conditions. Typhus impoverished Europe not only by its high mortality but by the great emigration from its shores, leaving the degenerate to beget its generations.

Before leaving the history of typhus in Europe, I wish to quote the definition of the disease given by the greatest English authority of the nineteenth century, Murchison:

> A disease attacking persons of all ages generated by contagion, or by overcrowding of human beings, with deficient ventilation, and prevailing in epidemic form, in periods or under circumstances of famine and destitution. Its symptoms are: more or less sudden invasion marked by rigors or chilliness; frequent, compressible pulse; tongue furred and ultimately dry and brown; bowels, in most cases, constipated; skin warm and dry; a rubeoloid rash appearing between the fourth and seventh days, the spots never appearing in successive crops, at first slightly elevated, and disappearing on pressure, but, after the second day, persistent, and often becoming converted into true petechiae; great and early prostration; heavy flushed countenance; injected conjunctivae; watchfulness and obtuseness of the mental faculties, followed at the end of the first week by delirium, which is sometimes acute and noisy, but often low and wandering; tendency to stupor and coma, tremors, subsultus, and involuntary evacuations, with contracted pupils. Duration of the fever from ten to twenty-one days, usually fourteen. In the dead body no specific lesion; but hyperemia of all the internal organs, softening of the heart, hypostatic congestion of the lungs, atrophy of the brain, and oedema of the pia mater are common.

Typhus fever became epidemic in Mexico soon after the conquest (1530) and has continued in endemic form with occasional severe exacerbations to the present time. According to Liceaga the second recorded epidemic occurred in 1545 and the third in 1575. In 1736-1737 the disease is said to have killed 192,000. During the nineteenth century there were many exacerbations, the most extensive of which was in 1861. At the present time typhus is common in Mexico.

Importations of typhus by immigrants into this country have been constant and it is probable that at no time have our large cities been wholly free from it, but in most instances it has been limited to recently arrived immigrants and those directly in contact with them.

Doty says: "Out of 439 cases of typhus fever which occurred in New York during 1892-1893, 434 were removed from the poorer tenement and lodging houses, principally the latter."

In the records of the Civil War 1,723 cases with 572 deaths are reported under this name, but the diagnosis of many of these were questioned by the best medical officers, such as Woodward and Clymer. No cases were reported by Confederate officers. It is certain that typhus did not play any marked part in the mortality of that war.

THE TRANSMISSION OF TYPHUS

In 1909 Nicolle, stationed in Algiers, made two notable discoveries concerning the transmission of typhus fever. In the first place, he induced the disease in the chimpanzee by injecting the blood of patients and in like manner he transferred the disease from the chimpanzee to the macacus monkey. He was not able to transfer the disease in this way directly from man to monkey, but could do so indirectly through the chimpanzee. This suggests that the virus is increased in intensity by passage through the chimpanzee. In the second place, Nicolle succeeded in transmitting typhus from monkey to monkey by the bite of the body louse. Typical eruptions were secured in the chimpanzee constantly, but not uniformly in the monkey.

The fact that typhus is transferable by the bite of the body louse has been confirmed by Anderson and Goldberger, Ricketts and others. This renders it desirable for us to know as much as possible concerning the life history of this parasite. Shipley of Cambridge, England, has recently made studies along this line and I follow him principally in the following statements. The body louse (*Pediculis vestimenti*) is somewhat larger than the head louse and carries longer antennae. The male is about 3 mm. long and 1 mm. broad. The female is about one-tenth larger. Its color is said to vary with that of the people on whom it feeds, black, brown, and with different shades of grayish white. It does not move about over the surface but is always attached to the inner side of the underclothing. Even in feeding, it remains attached by at least one of its six legs to the clothing. When

a lousy person is stripped, no lice can be found on him, but the inner side of the underclothing may be alive with them. When grown for the purpose of study, they must be permitted to attach themselves to bits of flannel and these must be brought into contact with the skin and the lice allowed to eat twice a day. They take hold promptly and feed greedily but never detach themselves from the flannel. The female after pairing begins to deposit eggs or nits at the rate of about 5 per day. These hatch after periods which vary markedly with the temperature. Cold delays hatching, but even freezing does not destroy the nits. Under favorable conditions the larvae emerge about the sixth day, and the larvae immediately begin to feed. Body lice seem not to be hardy and soon die unless they have frequent opportunity of feeding, but the clothing may carry nits quite indefinitely and these may hatch when the conditions become favorable. The newly hatched do not survive more than thirty-six hours without food. The lice are easily killed by gasoline or benzine or by turning the underclothing inside out and carefully applying a hot iron. Special attention should be given to the seams. Boiling quickly destroys both the insects and their eggs. It will be seen that as simple as these requirements are in ordinary life they are quite impracticable to the soldier in the trenches, especially when he has no change of underclothing. It is said that this parasite feeds only on dirty people and that it will not infest those who wear silk; but the soldier must be dirty, sometimes at least, and he is not supplied with silk underwear. Gasoline and benzine cannot be used by the soldier on account of their ready inflammability. A dilute solution of lysol or cresol soap made into a lather is applied to the inside of the clothing and left there to dry. Physicians and nurses in caring for typhus patients are exposed to great danger and the death rate among them has always been high. In recent years more than one medical man has contracted typhus in trying to solve its etiology and of the six American physicians who have recently studied typhus fever in Mexico three have contracted the disease and two have died—Conneff of the State University of Ohio and Ricketts of the University of Chicago. These are names now added to the martyr roll of science. Of Ricketts, his teacher and friend, Hektoen, has deservingly said:

> Those near him know that he fully understood the dangers to which he would be exposed and the risks he would run. He decided he would take those risks, meet the dangers with all possible means of prevention, and do the work that would come to his hands. And so he made the great sacrifice and gave all that a man can give to his fellow men.

Other American medical men and nurses have given their lives in the combat with this disease in desolated Serbia and others still are there and elsewhere in war-scourged Europe, seeking not to destroy but to save lives, fighting under the great battle flag of humanity and science.

Quite independently of the work of Nicolle, Anderson and Goldberger, Ricketts and Wilder, Conneff and others studied the etiology of typhus in Mexico. They found that the disease could be transmitted from man to the lower monkeys, without passage through a chimpanzee, that the virus in the blood is removed by filtration through porcelain, that one attack in the monkey gives immunity and that Nicolle was right in his claim that the disease is transmitted by the body louse. All attempts to transfer the disease by fleas and bed bugs have failed, while those with the head louse (*Pediculis capitis*) have not given uniform results.

For some years Brill has observed a peculiar disease in the wards of Mount Sinai Hospital, New York, and up to the present time he has records of about three hundred cases. Brill has described this disease as follows:

> An acute infectious disease of unknown origin and unknown pathology, characterized by an incubation period of from four to five days, a period of continuous fever, accompanied by intense headache, apathy, and prostration, a profuse and extensive erythematous maculo-papular eruption, all of about two weeks duration, whereupon the fever abruptly ceases either by crisis within a few hours or by rapid lysis within three days.

Anderson and Goldberger have shown that Brill's disease is typhus fever by injecting the blood of patients into monkeys and thereby establishing immunity to typhus.

Nicolle has reduced typhus in Tunis from 838 cases in 1909 to 22 cases in 1912. The only measure employed consists in freeing the people of lice.

THE ORGANISM

Plotz has isolated the organism and with Olitsky and Baeher has shown by complement fixation and agglutination tests that he has, most probably, found the infecting agent. In the agglutination tests only positive reactions in dilutions 1:50 were considered.

Of twenty-four cases tested before the crisis all were negative except two which were tested one day before the crisis, both of which had a titre of 1:100. Of ten cases tested on the day of the crisis, three were positive and seven negative. After the crisis, thirty-eight cases were studied, 92.6 per cent. of which were positive. Agglutinins have been demonstrated as late as five months after the crisis. Of a very large series of control cases, no case gave a reaction in a dilution above 1:50, except three cases in which the occurrence of a previous attack of typhus fever could not be excluded. In these cases the reactions varied from 1:100 to 1:200. Control studies made by testing the serum of typhus cases against various other organisms were negative.

The opsonic index increases at the crisis and remains high in the convalescent stage.

The organism is a small gram-positive bacillus, from 0.9 to 1.93 microns in length, the breadth being from one-fifth to three-fifths of the length. It is not acid-fast, has no capsule, and polar bodies can be demonstrated by appropriate methods. When first isolated, it grows only anaerobically, but after a time it can be grown aerobically.

Intraperitoneal inoculation of a pure culture of the organism into guinea-pigs produces a rise of temperature in from twenty-four to forty-eight hours, the temperature remaining high for four or five days, and then dropping by crisis. This corresponds to the reaction seen in guinea-pigs after inoculation with defibrinated blood from typhus fever patients, except that the incubation period is shorter. Serum from a convalescing typhus patient has bactericidal properties against the organism obtained from Brill's disease and typhus fever.

Diseases with Highest Mortality.—According to the 1913 report of the Census Bureau, nine diseases cause more than half the deaths in the registration area comprising 65 per cent. of the population of the country. The diseases and number of deaths are as follows: tuberculosis, 93,421; heart diseases, 93,142; pneumonia, 83,778; nephritis, 65,106; diarrhea and enteritis, 57,080; cancer, 49,928; cerebral hemorrhage, 47,220; diphtheria, 11,920, and typhoid, 11,323.

HYPERTONIC SALT AND ALKALI SOLUTION IN SALVARSAN ANURIA *

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A man aged 45 had an aneurysm of the thoracic aorta extending from the diaphragm upward. The diagnosis was based on the character and distribution of the pain, the existence of cardiac hypertrophy with a peculiarly metallic aortic closure, a history of lues, a positive Wassermann reaction in the blood, and a roentgenogram. No other explanation of the symptoms was found in spite of an exhaustive study.

This patient had been treated with iodids and mercury, and had at first improved, but later suffered excessively from pain. He had then been given salvarsan. Within eight days he received three doses of 0.3, 0.3 and 0.4 grams respectively of old salvarsan. Forty-eight hours after the last one he felt ill and had a temperature of 99 F. During the day this rose and at 8 p. m. it was 102. He then complained of headache and slight nausea. The bowels had not moved. He grew very thirsty and drank water freely, but until noon of this day he had passed only 200 c.c. of urine. The urine was dark and contained a trace of albumin. After 1 o'clock he passed no urine at all. Examination revealed no palpable edema and no demonstrable ascites. He was taking in water and putting little out, still this water was not palpably accumulating in superficial regions. A tentative diagnosis was made of salvarsan poisoning.

Arsenic is one of that group of substances whose effects on the tissues and on the metabolism as a whole closely resemble that of tissue or general asphyxia. In respect to its effects on the structure of the tissues and on their metabolism, it belongs in the same general category with phosphorus, chloroform, hydrazin, and a long list of narcotic drugs. These all produce, in different degrees and admixtures, cyanosis with increased blood and tissue acidity, cloudy swelling and fatty infiltration of the cells of the viscera, especially of the liver and of the kidneys, but to a less degree of all cells. This parenchymatous degeneration goes on in the case of some of these drugs to the point of necrosis. A tendency to multiple hemorrhage is common. The nature of the changes in salvarsan poisoning has been studied extensively and is too familiar to require description here. Swelling, due to the imbibition of water by the parts most affected, would in the present case have accounted for the obvious water retention without tangible subcutaneous edema, and it was thought probable that the liver was swelling, the kidneys swelling, and perhaps also the brain and other viscera. As a matter of fact, the edge of the liver was easily palpable, soft and somewhat tender. The urine had contained albumin prior to its stoppage, and, as stated, the patient complained of headache and a little later became mildly delirious, all of which symptoms and signs were in keeping with the presumption of a liver, kidney and brain swelling or edema.

The relationship between asphyxia of a tissue and the rate at which acids accumulate in such a tissue is well established. The survival formation of lactic acid in a muscle which is immersed in an atmosphere of hydrogen and its rapid disappearance in an atmosphere of oxygen has been measured and timed with faultless precision by Fletcher and Hopkins. The great increase in the rapidity of lactic acid formation in surviving muscles when chloroform vapor is allowed to surround them has also been shown by the same writers, and the increased output of lactic acid in the urine, together with an actually increased hydrogen ion acidity in the blood, has been repeatedly demonstrated in asphyxias of various sorts and specifically following intoxications with narcotic drugs, phosphorus, arsenic and other members of that group whose characteristic tendency is to check cell respiration.

The power of acids when added to protein colloids so to alter these substances that they swell with the imbibition of water has been emphasized by the work of M. H. Fischer, and the power of acids when introduced into the tissues of the body to cause swelling, water retention, cloudiness of the cells, in short, edema, has been regarded by him as a phenomenon of the same nature as the swelling of protein gels in the test tube. That drugs of the group named do produce both acid, secondary to asphyxia, and edema of the parts where the action is most intense, is common knowledge.

Fischer's proposal to meet such conditions by bringing alkali into the tissues to neutralize any excess of acid which may still be there in neutralizable form, and simultaneously to bring into them sufficient quantities of a suitable neutral salt to dehydrate the neutral but still swollen tissue colloids, has been tested in this laboratory by E. A. Graham in experimentally produced chloroform intoxication in animals. Graham determined the doses of chloroform which, when given to animals of certain weights, always produced the severe symptoms of late chloroform poisoning, including the characteristic central lobular necrosis in the liver, along with edema, fatty infiltration, etc. When in animals of the same weight the same dose of chloroform was given and then followed by a suitable intravenous dose of hypertonic sodium chlorid with sodium carbonate in the form known as Fischer's solution, the necrosis was modified or failed entirely to appear.

Since chloroform and arsenic (hence salvarsan) are, as stated, closely related in their effects on the tissues and on the metabolism, the case mentioned above seemed an appropriate one in which to try the benefits of a salt alkali therapy.

Accordingly the patient was given 200 c.c. of Fischer's solution by bowel and two hours later the dose was repeated. This was at 9 p. m. The second dose was given at 11 p. m. It was also ordered that the patient take no food or any drink except lemonade to which sodium bicarbonate had been added until there was no longer any effervescence. The purpose of this was to provide that no fluid should be taken into the body without containing a suitable concentration of salt (in this case chiefly citrate) to carry it through, or, in other words, to make it diuretic for a normal individual, thus lessening the chance of vitiating the effect of the supertonic solution by bowel with a large quantity of subtonic solution by mouth, to do which, of course, would be equivalent to making up a supertonic solution and then promptly destroying its supertonicity by dilution before it was given. The bicarbonate was added merely for consistency to make the fluid taken by mouth alkaline rather than acid. As a matter of fact, the increasing nausea culminated in vomiting at about 10 o'clock, after which the patient slept for a

* From the Otho S. A. Sprague Memorial Institute Laboratory of Clinical Research, Rush Medical College.

time, so that little of the lemonade was taken. At about 10:30 the nurse reported the appearance of a florid erythematous rash over the face, neck and trunk.

At about 3 a. m., or four hours after the second salt alkali enema, there was a watery stool, and the patient passed 45 c.c. of urine. Between 6 and 7 a. m. he passed 120 c.c. more. A third injection of 200 c.c. of Fischer's solution was given by bowel and retained. By noon the urine totaled 600 c.c. The delirium and headache cleared and the nausea disappeared. The temperature fell to 99.

For the next two days the patient was given fruit, fruit juices and soft cooked vegetables with rusk, butter and cream. He was allowed water *ad libitum*, with potassium citrate, 20 grains, four times a day, and sodium bicarbonate, 60 grains, three times a day. On the second day the urine totaled 990 c.c., and at the end of the week averaged 1,500 c.c., although during the week there were minor diminutions of urine and periods of malaise and headache. Ultimately there was complete recovery, and since this experience the patient has received three doses of 0.4 gram of old salvarsan by vein at three-week intervals with no apparent injury and with considerable ameliorations of the general conditions.

In view of the fact that this patient was constipated when treatment was begun, that he received 1 gram of old salvarsan within a week, that symptoms first appeared after a characteristic delay and then included fever, albuminuria and urinary suppression, nausea, vomiting, headache, delirium and an erythematous rash, this case is recorded as one of a salvarsan reaction sufficiently serious to occasion grave concern, in which a sharp turn for the better followed by ultimate recovery took place within a few hours after the administration by bowel of an alkaline hypertonic solution (Fischer's solution) with no other therapy. An isolated experience of this sort is considered as suggestive that a suitable application of the same general therapeutic principles might prove of value in intoxications of the type described.

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THE EFFECT OF ALTITUDE ON BLOOD PRESSURE

WITH MINOR MISCELLANEOUS OBSERVATIONS

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Just what normal blood pressures are, at sea level and elsewhere, is a matter concerning which there is the widest diversity of opinion. Goodman[1] states that the systolic readings for normal young adults are from 120 to 130, and the diastolic about 85. Making the usual allowance for posture, digestive action, psychic disturbances, etc., he thinks that a systolic pressure of more than 140 is pathologic. Harlow Brooks[2] mentions 120 as the usual systolic pressure, but finds that in persons whose occupations entail mental activities it normally ranges between 140 and 155. Janeway[3] states that "in the great majority of young males 100 to 130 mm. will be found," and names the normal diastolic pressure as from 65 to 110. Faught[4] states that 120 may be taken as the normal systolic pressure in the male at age 20, and adds 1 mm. for every additional two years of life. He believes that the question as to what variations from this are normal cannot be definitely answered, but suggests 17 mm. above or below, or a total variation of 34. Barach and Marks[5] conclude that in 90 per cent. of healthy young men the systolic pressure is below 150, and in 96 per cent. the diastolic is less than 100. These readings are presumed to have been made at or near sea level. Among others who have made careful study of the normal blood pressure, but with special reference to the effect of altitude, are Gardiner and Hoagland,[6] Schneider and Hedblom,[7] and Pomeroy.[8]

To the study of blood pressure in health I have to contribute only the readings made at Fort Stanton (altitude 6,230 feet) on fifty-four young adults, of whom seventeen were females. In this series, as in the others here reported, the auscultatory method was used and diastolic pressures read at the fifth phase or point where pulse sounds disappeared.

TABLE 1.—BLOOD PRESSURE IN THE HEALTHY
ALTITUDE, 6,230 FEET*

MM. Hg	Systolic	Diastolic	Pulse
From 10 to 20	0	0	2
From 20 to 30	0	0	6
From 30 to 40	0	0	16
From 40 to 50	0	0	20
From 50 to 60	0	1	6
From 60 to 70	0	3	4
From 70 to 80	0	17	0
From 80 to 90	0	26	0
From 90 to 100	0	5	6
From 100 to 110	5	2	0
From 110 to 120	9	0	0
From 120 to 130	25	0	0
From 130 to 140	12	0	0
From 140 to 150	2	0	0
From 150 to 160	1	0	0
	54	54	54

* As pointed out by Norris (Blood Pressure: Its Clinical Application), blood pressure as ordinarily referred to is the difference between atmospheric pressure and the absolute blood pressure and is purely relative. The absolute pressure, both atmospheric and arterial, is of course constantly lowered by increasing altitude.

Our average systolic reading in the healthy was 129 for men and 121 for women; the average diastolic reading was 84 and 82 for men and women, respectively. It must be said, however, that averages are not very helpful in arriving at conclusions on this subject. We are inclined to believe that the effect of altitude on normal blood pressure has been frequently overestimated and sometimes confused with that of other influences.

Opportunity to observe the effect of altitude on blood pressure in the tuberculous has been afforded by the fact that about 150 patients are transferred each year from the coast to this station. For more than a year manometer readings have been made at all the hospitals belonging to the Public Health Service immediately before transferring a patient. Uniform methods of observation were prescribed by the Surgeon-General in general order, and the minimum width of the cuff fixed at 10 cm. The technic at this station has been uniform and carefully followed. The two aneroid instruments in use, the Faught and the Tycos,

1. Goodman, E. H.: Blood-Pressure in Medicine and Surgery, Philadelphia, Lea & Febiger, 1914.
2. Brooks, Harlow: New York Med. Jour., July 25, 1914.
3. Janeway, T. C.: Clinical Study of Blood-Pressure, New York, Daniel Appleton & Co., 1904.
4. Faught: Blood-Pressure from the Clinical Standpoint.
5. Barach, J. H., and Marks, W. L.: Blood-Pressures, Arch. Int. Med., April, 1914, p. 648.
6. Gardiner and Hoagland: Tr. Am. Climatol. Assn., 1905.
7. Scineider and Hedblom: Am. Jour. Physiol., xxiii, No. 2.
8. Pomeroy: Interstate Med. Jour., 1911, xviii, No. 7.

respectively, were checked up with a mercurial instrument from time to time and with each other, and have been found constantly correct. The personal equations of the various officers engaged in taking readings have been compared. Only one systolic reading was made at the marine hospitals located at sea level. This is compared with the systolic pressures made on the four successive days after arrival at this station. Pressures are considered the same when one reading at this station has been found to coincide with one at sea level, and when one or more higher readings coincident with one or more lower were found. Obviously, the comparison cannot be exact. At present, systolic and diastolic readings are being made at the principal stations located at sea level for four days before transfer, and it is expected that a more exact comparison can be offered next year.

The psychic disturbance occasioned by a three or four day transcontinental journey ending in a stage ride of 8 miles is considerable. Patients arrive excited by the knowledge that here the last stand in the fight against their disease is taken. It is not surprising, therefore, to find that in some cases the blood pressure was found higher here than at lower altitudes, and this regardless of any effect altitude may have. Out of 169 cases, systolic pressures were practically the same in 118, slightly higher in 23, slightly lower in 8, considerably higher in 15, and considerably lower in 5.

The effect of altitude on blood pressure in the tuberculous does not appear to be great, and when due allowance is made for disturbing factors, there is nothing found in our observations to indicate that an altitude of 6,230 feet has any pronounced influence on this phenomenon in the ordinary case.

MISCELLANEOUS OBSERVATIONS

The effect of tuberculosis itself on blood pressure is too well known to require comment. Authorities seem to be in complete accord that hypotension always prevails in uncomplicated active disease. The classes of tuberculous patients included in Table 3 have been the subject of discussion in recent literature on blood pressure, and the observations are believed to be of some value. The number in each, forty-three, was so fixed because that was the number of patients having frank hemorrhage during the period of observation. It may be noted here that it is not practicable to study the effect of prolonged residence on blood pressure in the tuberculous. Such an attempt would resolve itself into a study of the results of treatment and the effect of improvement or loss on blood pressure.

A AND B HEMOPTYSIS

More than casual interest has been taken in hemoptysis at this station, owing to the large number of fatalities (10 per cent. of all deaths) occurring here from pulmonary hemorrhage. A report of fifty-six such deaths appeared in the *Public Health Reports*, No. 51, in 1910. In the present study of the correlation of blood pressure and hemoptysis, the systolic readings

TABLE 2.—COMPARISON OF SYSTOLIC BLOOD PRESSURES AT SEA LEVEL AND AT FORT STANTON, 6,230 FEET

Patients Transferred from U. S. Marine Hospital at	Same	1 to 10 mm. Hg Higher	1 to 10 mm. Hg Lower	11 to 20 mm. Hg Higher	11 to 20 mm. Hg Lower	21 to 30 mm. Hg Higher	21 to 31 mm. Hg Lower	More than 30 mm. Hg Higher	More than 30 mm. Hg Lower
San Francisco....	16	14	4	9	3	6	0	3	3
New York.....	14	8	6	4	3	2	0	0	0
Chicago	9	5	3	1	0	0	0	0	0
Baltimore	1	4	2	6	0	2	0	0	0
Cleveland	3	4	2	0	1	1	0	0	0
Boston	1	0	6	0	0	0	0	0	1
Detroit	1	1	1	2	1	0	1	0	0
Other stations....	7	3	3	1	0	1	0	0	0
	52	39	27	23	8	12	1	3	4

TABLE 3.—MISCELLANEOUS OBSERVATIONS

Systolic mm. Hg	A With Hemoptysis	B Without Hemoptysis	C Far Advanced; Favorable Results	D Far Advanced; Unfavorable Results	E Far Advanced; Unfavorable Results; Dyspnea Marked
From 70 to 80.....	0	0	0	1	0
From 80 to 90.....	0	0	0	1	0
From 90 to 100.....	1	5	2	8	11
From 100 to 110.....	19	14	8	17	22
From 110 to 120.....	11	9	19	13	9
From 120 to 130.....	4	9	8	3	1
From 130 to 140.....	4	5	3	0	0
From 140 to 150.....	3	1	2	0	0
From 150 to 160.....	1	0	1	0	0
	43	43	43	43	43

of those having pulmonary hemorrhage are compared with those of carefully matched cases free from hemorrhage. Both early and late cases are included in the series. In matching a hemorrhage case with a non-hemorrhage case, careful attention to details was given, and they are as nearly alike as possible in age, race, extent and duration of disease, in prognosis where the patients are still under treatment and in result where treatment has terminated. Patients with manifest complications were excluded from both classes. The readings are the average of those taken at the regular bimonthly examinations and are therefore not modified by the influence of hemorrhage. Nothing was found to support the contention of those who believe that most hemoptyses occur in those with high systolic pressure.

C, D AND E RESULTS

The systolic pressures of forty-three patients who died are compared with those of an equal number of patients with far advanced disease who made an apparent cure or an arrestment, and also with those of patients suffering from the effects of altitude. These men had been under treatment for about a year, although not all at the same time, and many readings were made on each, of which the average was taken for use in Table 3. Column C, on favorable results, contains the record of our best results of treatment, all patients referred to therein having confirmed an arrestment of disease by at least two months of continuous employment. Comparison with the readings of other observers shows no great variation from manometer readings in similar cases at sea level. There is apparent neither depression due to altitude, except possibly in Column E, where readings were made on those suffering from dyspnea, nor the elevation of blood pressure claimed by one or two observers to occur at 6,000 feet, and which they presumed to indicate the advantages of altitude in treating tuberculosis. It seems extremely doubtful whether moderate altitude has any pronounced effect on blood pressure in the tuberculous, except possibly in those whose circulatory apparatus is unable to accommodate itself to the increased strain thus put on it by adverse influence. Sufficient data are not yet available to determine which is cause and which effect in this phenomenon.

INDUCED PNEUMOTHORAX

The influence of induced pneumothorax on blood pressure has been studied on sixteen patients who have been treated by this method for about seven months. The effect of the excitement of operation itself was excluded by taking the manometer readings at another time. The readiness with which fallacious results in blood pressure may be obtained was exemplified when the readings of one set of observers were found to show a marked increase of blood pressure in all patients in this group. But when the readings of all the observers were averaged, it was found that this was due to that large variation in blood pressure found in some individuals without apparent cause. Taking all the readings, which extended for several months and in some instances more than a year before treatment by induced pneumothorax was instituted, it is found that there have been no important changes in the blood pressure of the individuals treated. In one there appears to have been a temporary increase and in another a temporary decrease during the first month of compression, both returning to the original readings after a few months. In two individuals there was a slight increase in blood pressure, which began soon after treatment was instituted and which has continued to the present time. This reached in one instance from 2 to 14 mm. Hg systolic pressure, and in the other from 6 to 18 mm. Hg.

The blood pressure in both right and left arms was observed in induced pneumothorax patients to determine the effect of the treatment. No greater difference in the two arms was found than is normal except in one case of incomplete compression, pleural adhesions being present, in which the readings in the right arm were 114 systolic, 98 diastolic, and in the left arm 132 systolic, 88 diastolic. This patient's right lung was the one compressed, and it seems not improbable that the nitrogen contained in the pleural cavity had some direct influence on the circulation on that side. Four months later, after reexpansion of the lung was nearly completed, the manometer readings on the right arm were systolic 120, diastolic 94; left arm, systolic 128, diastolic 86. No great importance is attached to the aberrant readings in this case, and it is our impression that in uncomplicated cases of induced pneumothorax, when compression is effected with the usual caution, no pronounced effect on blood pressure results.

ACKNOWLEDGMENTS

The blood pressure readings at sea level were made by the various officers of the Public Health Service stationed at marine hospitals belonging to this service. All the junior officers on duty at this sanatorium have assisted in the routine blood pressure measurements made here. Acting Assistant Surgeons William Keiller and F. S. Littlejohn made the special readings on the healthy and on those treated by induced pneumothorax, respectively.

INFECTIONS WITH HEMOGLOBINOPHILIC BACTERIA *

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The hemoglobinophilic bacteria comprise a rather large group of bacilli which grow only in an artificial medium containing hemoglobin. This group does not include the many bacteria that, while growing better in mediums containing blood or blood serum, will also grow in mediums not containing hemoglobin. Its representative organism and by far its most important member is Pfeiffer's bacillus (*B. influenzae*), which was discovered by Pfeiffer in the respiratory tract of patients afflicted with influenza during the great pandemic, in 1889-1890. Not only did he discover and isolate this organism at that time, but he definitely proved its hemoglobinophilic character, a property of bacteria hitherto unknown. In his classical paper[1] in which he reported these researches he also described other organisms differing in certain respects from the true influenza bacilli but similar in being hemoglobinophilic. These he called pseudo-influenza bacilli. Since then these pseudo forms, which have also come to be commonly referred to as influenza-like bacilli, have been found especially in the upper respiratory tract in a variety of diseases.

* From the Department of Experimental Medicine, University of Illinois.
* Read at the meeting of the Chicago Society of Internal Medicine, March 22, 1915.
1. Pfeiffer: Ztschr. f. Hyg., 1893, xiii, 357.

I have gone over my data which have accumulated on this subject during the last several years and have arranged it in tabular form (see table). The isolation of the bacilli was made on blood-agar plates, usually using human or rabbit's blood. Except the tonsils, the material examined was either the sputum or swabs of the pharynx.

Especial attention was given to the detection of this particular group of organisms in all the examinations. They were not made in the various clinical conditions because there was any reason to think an infection with hemophilic bacteria existed. Therefore they are not selected cases in any sense. The data, furthermore, was collected during a period of several years, no essential difference being noted from year to year; the presence of hemophilic bacilli therefore cannot be explained by assuming the existence of a possible seasonal epidemic of influenza.

It will be seen from the table that hemophilic bacilli are very common in different kinds of infectious diseases. Probably in all except the influenza meningitis cases, there is no good reason to look on them as primary infections, but simply as secondary invaders,

TABLE SHOWING OCCURRENCE OF HEMOPHILIC BACTERIA IN VARIOUS INFECTIOUS DISEASES

Disease	No. Cases	Hemophilic Bacilli Present	Per Cent. Positive
Influenza (grip)	40	7	17
Bronchopneumonia	26	10	38
Lobar pneumonia	12	4	33
Measles	23	13	56
Varicella	11	7	64
Pertussis	68	61	89
Pulmonary tuberculosis	5	3	60
Acute articular rheumatism	11	0	0
Epidemic meningitis	11	4	30
Influenza meningitis	7	7	100
Tonsil crypts	300	3	1
Normal throats	20	2	10
Total	534	121	23

which find a suitable environment in connection with lesions produced by other and usually more virulent organisms.

In the forty cases of clinical influenza or grip, 17 per cent. of the examinations yielded hemophils. They comprise cases from epidemics occurring in two different years, each of which gave approximately the same results. Streptococci, pneumococci and *Micrococcus catarrhalis* were the principal organisms found, sometimes one, sometimes another, predominating; often the types were about equally mixed.

In pertussis they are present in nearly every case, some time during the course of the disease, usually after the paroxysmal stage sets in. They may remain in the throat for a considerable period of time after the symptoms disappear. In some cases the bacilli are very numerous and on the plates are in almost pure culture, while in other cases they are few. They may be persistently absent and then suddenly appear in enormous numbers and thus continue. Pneumococci and streptococci are nearly always found and not infrequently bacilli, *M. catarrhalis* and diphtheria-like organisms appear in the cultures in small numbers.

In measles they are common, espècially in cases in which cough is a pronounced feature. *M. catarrhalis* was commonly found also. Varicella gave much the same bacteriologic findings as measles.

In lobar pneumonia, of course, the pneumococcus is as a rule the predominating organism in the sputum, while streptococci are usually present in small numbers. Influenza bacilli were present in the sputum four times in twelve cases examined. In one case it was interesting to note that even early in the disease (fourth day) these bacilli were present in typical pneumonic rusty sputum in numbers exceeding the pneumococci. In another case of a somewhat atypical pneumonia in which, however, pneumococci were obtained in the blood in pure growth, examination of the washed sputum on the fourth day of the disease gave 80 per cent. *M. catarrhalis* colonies and 20 per cent. pneumococcus colonies. No hemophilic bacilli were present. Subsequent examinations gave the same findings. Again, an elderly man became ill with symptoms of lobar pneumonia. The sputum at first was bloody and later became profuse and purulent. The clinical diagnosis of abscess of the lung was made. Examination of the washed sputum gave enormous numbers of hemophil colonies, chiefly in clusters around colonies of other bacteria. No pneumococci appeared in the plates. A few days later, death occurred. Postmortem examination showed lobar pneumonia with several abscesses in the lungs. Pus from an abscess gave pneumococci 60 per cent., streptococci 35 per cent., *Staphylococcus aureus* 5 per cent.; no hemophils. These cases are instructive as showing the variation in the bacterial flora not only in complicated cases, such as the last, but even in typical cases of pneumonia.

Only five cases of pulmonary tuberculosis were examined. Hemophils were found in the sputum in three of these. It has been observed by many that they are common secondary invaders in this disease.

In the epidemic meningitis cases they were found in the nose and throat four times in eleven cases.

In normal throats they are occasionally found. Swabs of the throat from twenty normal persons gave growth of influenza-like bacilli twice; they were present in small numbers.

In the tonsil examinations, all cultures were made on blood mediums from the depths of the crypts after the organ had been carefully incised and laid open. In all cases the tonsils were diseased to some degree and came from persons suffering from a variety of conditions. Forty-two were from patients with chronic joint disorders, ten from those with chronic nephritis, and forty from persons with endocarditis. Most of the remainder were removed because they were excessively hypertrophied, and came largely from children. Of the three hundred pairs of tonsils examined, in only three were influenza-like bacilli found, and then in small numbers and mixed with other bacteria. They were all from the group of cases of hypertrophied tonsils without other serious lesions. It is evident that by comparison with other conditions mentioned in the table, the hemophilic bacilli are rare inhabitants of the tonsillar crypts.

The total number of examinations made for the bacilli was 534, in 121 (23 per cent.) of which they were found. Excluding the tonsils, the total number examined was 234, in 118 (51 per cent.) of which they were present. The table shows they occurred fairly uniformly in the various diseases. It may be stated as generally true that they are found more frequently and in larger number in those cases in which there is involvement of the bronchi, especially the chronic cases with profuse expectoration, than in conditions like tonsillitis and acute rheumatism, in which the lesions are usually limited to the upper respiratory tract.

These bacilli are all very similar, indeed practically identical, and they also agree in all essential details with the description of Pfeiffer's bacillus as given by himself and by others. They differ from each other perhaps only in the matter of virulence, in which respect they seem to vary somewhat. As an illustration, I may refer to the organisms of this type already mentioned which not uncommonly cause acute meningitis in children. I have had an opportunity to study seven such cases,[2] all fatal, five of which were examined postmortem. They all occurred here in Chicago within the course of less than two years, at a time when an influenza epidemic did not exist. The onset in four was preceded by a "cold." The general course was that of an acute meningitis and did not differ essentially from the course of meningitis caused by pyogenic cocci. The hemophilic bacilli were found in immense numbers and in pure cultures in the spinal fluid and in the meninges and seemed to be identical with the true influenza bacillus, having, however, as a rule, a higher degree of virulence for animals. In rabbits after inoculation of relatively small doses they produce death by true septicemia, a result usually not possible to obtain with similar doses of Pfeiffer's bacillus.

In guinea pigs neither the hemophilic bacilli isolated from the respiratory tract of patients with the diseases noted in the table, nor those from the patients with meningitis are highly virulent. On the whole, the latter are slightly more virulent than the former, growth from two small agar-slants being sufficient, ordinarily, to kill in twenty-four hours after intraperitoneal injection. I inoculated the bacilli of this group into the human throat a number of years ago. The bacilli were isolated from the sputum of patients with whooping cough and swabbed into the tonsils and walls of the pharynx of a healthy young man who volunteered for this service. The inoculation was followed after forty-eight hours by definite symptoms of fever, redness of the throat with an abundant mucoid secretion and some cough. The symptoms lasted several days. In the abundant thick, tenacious mucus from the throat, influenza bacilli occurred in immense numbers and continued in the throat for at least four weeks. None was present in the throat before inoculation, as was shown by careful examination. I have also shown that bacilli of this type (hemophilic bacilli isolated from a case of bronchopneumonia) when injected in living cultures subcutaneously in the human, produced local swelling, redness and tenderness, and after several days an abscess containing yellow pus, in which the bacilli thrived and from which they were recovered in pure culture. These bacilli are therefore clearly pyogenic in character.

There can be no doubt, therefore, but that these bacilli may be to some degree pathogenic, and that while, like many other germs, they may be present without causing lesions, they are capable of producing reactions in the tissues and surely are not always harmless saprophytes in the human body.

This leads me to discuss further the relation of Pfeiffer's bacillus to epidemics of clinical influenza. In the literature there are numerous references to the occurrence of hemophilic bacilli in many infectious diseases and diseases of the respiratory tract. They have usually been referred to as influenza bacilli (Pfeiffer's bacillus), occasionally as pseudo-influenza organisms, and for the most part have been looked on as secondary invaders, except in influenza, in which the hemophilic bacilli have pretty generally come to be considered as the specific organism. Pfeiffer, in 1893, first announced this and since then an enormous mass of literature has accumulated, especially in Germany, much of which tends to substantiate the idea that his bacillus is the specific cause of this disease. If the evidence is carefully examined, however, it is found that in reality the specificity of this organism does not rest on any too sure foundation. It does not meet Koch's requirements. In many epidemics of influenza it is true they are found in the throat, being often present in large numbers, and they have been obtained from abscesses and numerous other lesions in the body. In postmortems the organisms have been found in large numbers, especially in the respiratory passages and the lungs. The pathogenicity of the bacillus for animals is low and the experiments of Pfeiffer with regard to the presence of toxins are not at all convincing. These facts are hardly sufficient to demonstrate beyond question that the organism is specific and that it is not merely a secondary invader.

It is interesting that the French, especially, have always been doubtful about the etiologic rôle of Pfeiffer's bacillus in influenza and they have presented many data in opposition to the view that it is specific for this disease. Elmassian,[3] in 1899, could not distinguish between organisms obtained from whooping cough, acute bronchitis, pulmonary tuberculosis and pneumonia. He considered them all identical with Pfeiffer's bacillus of influenza and said that it was not proved that this bacillus was the specific cause of grip. Sacquepee[4] studied a typical and very severe epidemic of grip in a garrison and found Pfeiffer's bacillus in only the latter part of the epidemic. At other times he found a gram-negative, motile, typhoid-like bacillus and also pneumococci and streptococci. He thinks that the influenza bacillus is not specific and that grip may not be due to any specific microbe. Bezançon and Israels de Jong[5] in an epidemic of grip studied the expectorations of twenty-five patients bacteriologically and found Pfeiffer's bacillus very rare. They called special attention to the *M. catarrhalis*, which was very common. They found pneumococci, streptococci, pseudodiphtheria bacilli, pneumobacilli and rarely staphylococci. They conclude that grip is not caused by Pfeiffer's bacillus, but is due to a variety of organisms of exalted virulence. Kleinenberger,[6] in twenty-seven cases of influenza, found them present in only eight cases. The *M. catarrhalis* was present in nearly every case. Von Jaksch[7] has described a condition under the name of pseudo-influenza which is indistinguishable clinically from influenza, but which is not caused by the influenza bacillus. He concluded that it was due often to a streptococcus invasion, because of the large number of these organisms found. In some the cause could not be determined, but he was sure it was not due to influenza infection.

Investigation of the literature on this point, therefore, corresponds very well with the findings as given

2. Davis, David John: Influenzal Meningitis with Especial Reference to Its Pathology and Bacteriology, Am. Jour. Dis. Child., 1911, i, 249.

3. Elmassian: Ann. de l'Inst. Pasteur, 1899, xiii, 621.
4. Sacquepee: Arch. de méd. exper., 1901, xiii, 562.
5. Bezançon and de Jong, Israels: Reviewed in Bull. de l'Inst. Pasteur, 1905, iii, 372.
6. Kleinenberger: Deutsch. med. Wchnschr., 1905, xxxvi, 575.
7. Von Jaksch: Berl. klin. Wchnschr., 1899, xxxvi, 425.

in the table. While it is undoubtedly true that in many epidemics of influenza Pfeiffer's bacillus is commonly found in nasal and oral excretions, it is equally true that epidemics and also sporadic cases occur in which the condition appears to be identical with influenza clinically, but in which Pfeiffer's bacillus only occasionally appears, and other organisms such as pneumococci, streptococci and *M. catarrhalis* occur very commonly and in large numbers. The most rational interpretation of these facts seems to be that there are a number of organisms which may give clinically the same picture and which may exist in the respiratory passages either in pure culture or occurring together. The fact that many cases indistinguishable clinically from influenza occur both in sporadic and epidemic form, not associated with the influenza bacillus, should be more widely known, for ever since the great epidemic of 1889-1890, almost every disease bearing any resemblance at all to influenza is assumed, without a bacteriologic examination, to be an influenza infection. Attention should be called also to the fact that smears of oral and nasal excretions are very unreliable in the diagnosis of this disease, and that to be sure of an influenza infection, cultures on blood-agar plates should be made.

A further point of interest in connection with these bacilli is the fact that when grown on mediums in the presence of other bacteria, for example, streptococci, staphylococci, etc., they multiply more rapidly, their colonies are larger and their virulence for animals is increased. In other words, they clearly show to a marked degree the property of symbiosis.

Grassberger[8] called attention to the occurrence of very large influenza colonies in the immediate neighborhood of colonies of other bacteria, when grown with them on blood-agar plates. He worked especially with the staphylococcus, but the same effect is obtained with the influenza bacilli when grown with many other varieties. He observed influenza colonies as large as 4 mm. in diameter grown in this manner, which, in pure culture, are usually only 0.5 mm. or less. It is well known that influenza bacilli will live and develop through several generations on non-hemoglobin mediums, when grown in mixed cultures. Pfeiffer, before he discovered the use of hemoglobin for influenza culture, noted the growth of influenza bacilli on agar smears with sputum, but could not successfully transplant them on this medium in pure culture. M. Neisser obtained mixed cultures of *B. xerosis and B. influenzae* from conjunctivitis in measles and grew them through twenty generations on plain agar. Strains of hemophilic bacilli from throats of patients with measles, whooping cough and scarlet fever were in like manner carried through many generations in mixed culture. With dead *B. xerosis* or its extracts no growth occurred. He contends the presence of a living organism is necessary to produce this symbiotic effect.

Frequently in blood-agar plates inoculated from sputum or swabs, there is observed a conspicuous cluster of influenza-like colonies surrounding other colonies present on the plates, such as those of streptococcus, staphylococcus and pneumococcus. They are in this location not only larger but apparently more numerous than when farther away from foreign colonies. In order to obtain such an arrangement, it seems necessary to have a large number of influenza colonies in the plate and a few of the foreign organisms. When the former colonies are numerous, they are often so small that a hand lens is necessary to see them, but around the foreign colonies, as a result of some favorable influence, they become much larger and are more easily seen. This appearance may be easily obtained by sowing the blood-agar plate densely with the hemophilic bacillus and sparsely with some other organism, such as staphylococcus. In twenty-four hours the symbiotic relationship is usually evident.

The growth of several strains of these hemophilic bacilli was tested on various mediums and to each were added dead bacteria (staphylococci and streptococci) and filtrates of cultures. The results were uniformly negative. All the experiments performed indicated that symbiosis is dependent on the presence of the living organisms.

The symbiotic relation of other bacteria to influenza-like organisms is shown by the increased pathogenicity of the latter for animals. I have made a number of animal experiments to determine the effect of introducing another organism with the hemophilic bacilli, into the peritoneal cavity. This had been done with the influenza bacillus and the streptococcus by Jacobson, who found that the virulence of the bacilli could thus so be increased that much smaller doses of the bacilli alone would be sufficient to kill. He obtained both the bacilli and streptococci in the body fluids and heart's blood. In my experiments, non-virulent *Staphylococcus pyogenes aureus* was used; 2 c.c. of a broth culture of this organism produced no effect when inoculated into the peritoneal cavity of guinea-pigs. When 0.5 c.c. of this culture was inoculated with two blood-agar slants of the hemophilic organism, which, as above stated, rarely killed, death invariably followed in twenty-four hours or less. From the peritoneal exudate, both organisms were isolated. From the heart's blood, however, as a rule, only the hemophilic bacillus was obtained and no staphylococci. In two animals in which large amounts of staphylococci were injected, a few were obtained also in the heart's blood. After passing the bacilli in symbiosis with staphylococci through six animals, one blood-agar slant alone would kill an animal in twenty-four hours. Thus its virulence had been more than doubled. The effect of *M. catarrhalis* and an avirulent streptococcus on hemophilic bacilli was found to be very similar to that of staphylococcus.

The increased pathogenicity of this organism when growing with another organism is directly associated with the symbiotic phenomenon noted above and probably depends on the same factors. Under the conditions in which we find these bacilli in the throat, for instance, they are always associated with other organisms and therefore are thriving under circumstances which permit a manifestation of their greatest virulence and most luxuriant growth. It is also quite possible that the injurious products of such growth may be not only more abundant but even of a different and more toxic character and it would therefore be improper to draw conclusions from the data obtained by growing the organisms in pure culture.

Several other varieties of hemophilic bacilli, differing in certain respects and especially in relation to symbiosis have been described by a number of observers. Friedberger[9] found in the preputial secretions of

8. Grassberger: Ztschr. f. Hyg., 1897, xxv, 453.

9. Friedberger: Centralbl. f. Bakteriol., 1903, i; orig., xxxiii, 401.

dogs such an organism, a very minute, gram-negative bacillus which was not pathogenic for animals and did not show the phenomenon of symbiosis. Some years ago I described[10] a somewhat similar bacillus, isolated from pathologic urine from three patients suffering with cystitis, in which there was evidence that a causal relationship to the infectious process existed. This organism was non-symbiotic and non-pathogenic for animals. Since then, C. Koch[11] has described an identical bacillus which he believed to be the causal organism, in a number of cases of puerperal infections.

Recently I obtained a somewhat similar bacillus from a large abscess of the shoulder joint in an infant a few months old. The child had been in the hospital for many weeks and was supposed to be a blue baby. He had clubbed fingers and became cyanotic when crying. Clinically there was evidence of a congenital heart lesion. Roentgenograms showed the heart dilated to the left, with evidence of a hypertrophied left auricle. Not only cultures of pus obtained from the abscess by aspiration, but also cultures of blood from the median basilic vein gave a pure growth of a minute, gram-negative, non-motile bacillus, which was strictly hemoglobinophilic and which resembled closely the influenza bacillus except in its symbiotic property. The same bacillus was grown from the bronchial secretion, and it was probably from this source that the organism entered the circulation and later localized in the shoulder joint. It grew readily on blood-agar under aerobic conditions. The colonies were about 1 mm. or slightly less in diameter, gray in color, slightly raised, moist and spreading, and were not hemolytic on blood-agar plate cultures. The organism showed no tendency to grow in clumps. In morphology, the bacillus was approximately the size of the influenza bacillus; bipolar staining was often observed. Short thread forms were commonly seen, simulating those in cultures of *B. influenzae*. The red blood count was 7,040,000; hemoglobin 100 per cent.; white count 18,300, which, when differentiated, gave small mononuclears 51, large mononuclears 7, polynuclears 40, eosinophils 1, transitionals 1. After aspiration of the shoulder joint, the child improved and one month later was still cyanotic, though the shoulder swelling had subsided. Cultures of the blood and of the nasal secretion at this time gave negative results.

Moon[12] has reported an anaerobic, strictly hemophilic diplobacillus isolated from an infected ethmoidal sinus. It differs from the Pfeiffer's bacillus as follows: It is larger; it is a diplobacillus; it gives more involution forms; it stains more readily and is anaerobic. It was found within the leukocytes in large numbers. It was specifically agglutinated by the patient's serum in dilutions of 16:1, and the opsonic index was 3. It was non-pathogenic for animals.

The hemoglobinophilic bacilli are interesting in that they are pure parasites, for the very evident reason that only in animals can they find the hemoglobin which, so far as we know, is absolutely necessary for their existence. And since they are not spore formers and are all very delicate organisms, their length of life outside the animal body is very short, probably a few days at the most.

The rather remarkable and extreme adaptation which they have undergone in relation to hemoglobin is also an interesting and important biologic phenomenon. While hemoglobin seems indispensable to them, certain closely related respiratory pigments, for example, hemocyanin and hemerythrin, which occur in some of the lower animals and appear to have a function similar to hemoglobin in the higher forms, cannot be utilized.

The exact rôle of hemoglobin in their metabolism is not known. They seem to be able to use about equally well this substance from nearly all higher forms of animal life, though the hemoglobin from the pigeon seems as a rule to give somewhat more abundant growth. It is doubtful whether the hemoglobin is necessary on account of its nutritive properties, because an extremely minute quantity (1 part in 80,000 parts of the medium) suffices for growth, and also because these organisms will not multiply at all when placed in distilled water containing small amounts of hemoglobin. The phenomenon may be therefore a catalytic one.

10. Davis, David John: Jour. Infect. Dis., 1910, vii, 599.
11. Koch, C.: Ztschr. f. Geburtsh. u. Gynäk., 1912, lxix, 634.
12. Moon: Tr. Chicago Path. Soc., 1913, ix, 51.

SUMMARY

The hemoglobinophilic bacteria may be divided into two general groups: (1) those of the Pfeiffer-bacillus type, all of which reveal the phenomenon of symbiosis and are very commonly found in infectious diseases; (2) a far more heterogeneous group which includes the organism described by Friedberger, the bacillus found by myself and by Koch in urinary and uterus infections, the bacillus found in the pus of the shoulder abscess previously referred to and also such organisms as have been described by Moon and some others. The first group is no doubt a very definite one, the members of which are closely related; indeed, usually practically identical. The second group comprises bacteria very different in character and remotely related to each other, having in common little more perhaps than the hemoglobinophilic property. Compared with the bacilli of the first group they are rare.

The hemophilic bacilli of Pfeiffer's type are of primary importance as secondary invaders in many infectious diseases, especially those involving the respiratory tract. As such, they are not harmless parasites, as has been shown by animal experimentation. In this respect they are about as common and often, perhaps, as important as such organisms as streptococci and pneumococci.

That they may be highly virulent at times and the cause of serious primary infections, is clearly shown in the not uncommon cases of purulent meningitis caused by these organisms.

Whether or not Pfeiffer's bacillus was the cause of the pandemic of influenza of 1889-1890, or is ever the cause of epidemics of influenza, is still a doubtful question.

Epidemics of clinical influenza occurring in recent years have been caused by a variety of organisms, including streptococci, pneumococci, *Micrococcus catarrhalis* and possibly other varieties.

Traveling Consumptives.—Few people with tuberculosis who travel exercise any precautions whatever. Beneficiaries of the three Government sanatoria are provided with pocket sputum cups, a colored 5 per cent. phenol, or other disinfectant solution, and are properly instructed. Others, particularly those who have resided at sanatoria, give some thought to their neighbors, but the vast majority of consumptives, as well as healthy persons, are careless with their sputa.—Ernest A. Sweet, *Public Health Reports*, April 9, 1915.

THE YOUNG GRADUATE AND THE PROPRIETARY MEDICINE QUESTION *

CARY EGGLESTON, M.D.
NEW YORK

The time has now arrived when you will go forth into the world at large to practice the profession to the study of which you have devoted these last four years. You all look forward to this as a time of release from the burdens of an academic life, and most of you probably anticipate it as the coming of your era of independence. I fear that those of you who cherish this idea without great restriction are destined to receive more than one rude shock within the first brief year. Within these walls your way has been pointed out to you by those who have learned the road by experience, and to them you have been able to turn for aid in the solution of the problems which have confronted you thus far. With the hour of your entrance into the practice of medicine, all of this will change, and it is you who will be sought out for advice and the solution of problems. Where these problems have to do with the diagnosis and treatment of human ills we have no fear that you will not solve them readily and, for the most part, with an ever-increasing skill. But other problems will confront you almost from the moment when you acquire your telephone number and place your nice new name plate out to face the weather.

Of these other problems and vexations, one which is destined to pursue you most relentlessly is that of the proprietary medicine and the "new and elegant pharmaceutic preparation" "nicely designed to suit all of your requirements." It is of this problem that I wish to speak a few words, and for the meeting of which I wish to prepare you in some measure.

PROBLEM OF THE PROPRIETARY MEDICINE

The chances are about even that among the first to ring your door bell will be a well-dressed gentleman carrying a small satchel who, without giving his name or stating his business, will so impress every one that he will gain admittance to your office at once. You will encounter in him a skilful and plausible talker who will endeavor to persuade you, for example, that for all pulmonary conditions you will find X-Y Company's scientific synthetic preparation decidedly superior to the older remedies. He will tell you of its advantages, will cleverly seek to implant the idea that it is quite without danger, that it is, of course, free from the many disadvantages possessed by all other preparations, including those in the "antiquated" pharmacopeia, and best of all, that it is in a form which is very pleasant to the patient and the doses and precise indications are stated in the neat little pocket companion which he will be glad to have you accept. Before he leaves you will begin to wonder why no mention was made of this truly remarkable new synthetic back in medical college. To make his case the stronger he will relate the names of several prominent hospitals in which it has now replaced the older drugs, and will casually call attention to the fact that Dr. Smith, who is the best-known man in your neighborhood, is using it in his practice with great success. All possible changes will be rung on this form of exploitation, and you will be bombarded on all sides by detail men, personal letters, beautifully gotten up booklets, card indexes, prescription pads and books, samples, circulars, wall charts, pencils, hosts of blotters, paper cutters, calendars, telephone pads, etc., each designed to induce you to use some particular preparation which has every conceivable advantage, with no disadvantage whatever. You will open your medical journal and be confronted with page after page of cleverly worded advertisements of the same preparations. Now and then a reprint will be sent you in a plain envelope of a paper by some unknown doctor with many titles and apparent hospital appointments whose name you could probably not find in the medical directory. But worst of all will be the time when one of your patients asks you what you think of "Laxaprune" or some other nostrum of that ilk for constipation.

A few of the preparations thus brought to your attention will be of some value and will not be frauds, but will be honestly offered and in some instances will be real additions to your therapeutic armamentarium. Others may be honest in their composition but will merely be nice mixtures of common pharmacopeial or National Formulary preparations, no better than you should be able to prescribe extemporaneously, but offered with some claims of advantage. Another group will comprise preparations perhaps not vicious in themselves, but made so by the exaggerated and false claims made for them. And the last group will be that of the utter frauds which are often not of the same composition two years in succession, although their claims never change with the alterations in their composition.

The problem which will confront you in this whole matter of the new synthetic, the specialty, the proprietary preparation and the nostrum will be for you to determine which is of value, the limitations of its advantages, and what dangers and disadvantages it has; which is merely a mixture such as any pharmacist could prepare on your prescription, and which are pure frauds. How are you to solve this problem? Have you the knowledge requisite for its solution? If you have the knowledge have you the time and the facilities at hand? Where shall you turn for trustworthy information? The first of these questions I will answer in a word or two, but to the last I shall devote some time, for it is your most important and readiest means available.

Have you the knowledge for the solution of this question in a given case? Yes, in many instances you have. Often the fraud is so patent and the claims are so preposterous and palpably impossible that a brief reflection will suffice to show you the worthlessness of the preparation. But in other instances there may be room for reasonable doubt, and the scrutiny to which you can submit the preparation will be inadequate to warrant a final judgment. You must here seek the aid of the unbiased opinions of others whom you can trust. This will also be true in those cases in which you could answer the question for yourselves, but for which you have neither the time nor the facilities.

NEW AND NONOFFICIAL REMEDIES

This leaves for discussion the question of where you shall turn for the desired trustworthy information. So short a time as ten years ago you would have been

* Address to the graduating class of Cornell University Medical College, 1915.

without such aid; but you who graduate now all have the desired source of information at your command. It is the volume entitled New and Nonofficial Remedies, published annually by the Americal Medical Association. That you may better understand the service this volume can render you I shall devote a few minutes to a brief review of its history and shall tell you something of the Council on Pharmacy and Chemistry, its work and the rules which govern its decisions on the characters and claims of the many preparations which are included in the volume. I shall also speak of the scope and limitations of the book and shall call your attention to some of the other work of the Council on Pharmacy and Chemistry which will prove of value to you in this same connection.

From the earliest days of therapeutics there have been frequent attempts made to commercialize various drugs and preparations, such common agents as ipecac, cinchona and veratrum viride long being thus exploited under the cover of secrecy. Then came the development of the complex mixture offered for the cure of a host of diseases and conditions, this rapidly developing into the common "patent medicine," which is still with us in untold numbers. As chemistry advanced within the past generation or so, there came the development of synthetic substances, some of which were found to have pharmacologic actions of more or less value.

The financial harvest reaped by the manufacturers of a few of these preparations, both synthetic and of the nature of common secret mixtures, naturally led many to turn their attention to the development of other preparations. It was soon appreciated by shrewd but unscrupulous persons that the liberal use of money for advertising would carry many preparations into wide use wholly without regard to any inherent value, or lack of value, which might be theirs. Secrecy and plausible praises were all that were necessary if combined with sufficiently wide and insistent advertising. Thus there sprang up in a night, like mushrooms, scores of simple mixtures of well-known substances under the guise of new synthetics, and hosts of worthless and even dangerous preparations. It was also discovered that physicians were, alas, quite as gullible as laymen, and there began a disgraceful exploitation of the medical profession which had reached such magnitude a few years ago that certain of the better informed members of the medical profession saw the need for a serious attempt to stem this tide for the good both of their profession and of the laity. This attempt finally took definite form in 1905, and in February of that year the American Medical Association created the Council on Pharmacy and Chemistry.

The Council on Pharmacy and Chemistry, or, as I shall speak of it, "the Council," is not a self-appointed committee of reformers, as some of its calumniators are fond of stating. It is a group of chemists, pharmacists, pharmacologists and physicians chosen for their ability to judge of the value of remedial agents, a certain number being elected annually by the Trustees of the American Medical Association. Their interest is the protection of the medical profession and the laity against fraud, secrecy and the undesirable advertising of proprietary remedies, and such as are not official in the pharmacopeia or National Formulary. It is their duty to examine into the validity of the claims made regarding new preparations, to record standards for their composition and to see that they are advertised in a way consistent with the truth regarding their value. To guide them in their decisions, it was necessary for the Council to establish certain rules with which each preparation should be required to comply before it could be admitted to the list of remedies which are honestly marketed and for which there is just evidence of some value. The preparations and remedies which meet all of the requirements laid down are said to be "accepted" by the Council for inclusion and description in its annual publication, New and Nonofficial Remedies. Their acceptance and inclusion in N. N. R. in no way implies any recommendation by the Council respecting their value. It merely indicates that they do not conflict with the published rules of the Council.

There are ten of these official rules laid down by the Council to govern the admission of any proprietary article to the book and, although these are given in full in the volume, together with some explanatory comments on them, I will take them up briefly for discussion, mainly to show how they serve to protect you against fraud and deception.

THE TEN RULES OF THE COUNCIL

Rule 1 requires that the composition of each preparation submitted for consideration shall be furnished to the Council for publication. When the substance is simple, its scientific name and chemical formula, if the latter is known, are required. In the case of mixtures, the amount of each active ingredient in a given quantity of the preparation must be stated, along with the general composition of the vehicle, including the percentage of alcohol which it contains and the identity of any preservatives which may be present. These data are published for each accepted article in the description given of it in N. N. R. You can, therefore, easily determine the precise nature of any such new preparation or drug by reference to this volume. You will then be in a position, in the case of many drugs and preparations at least, to judge for yourselves on the basis of your pharmacologic and therapeutic knowledge whether or not a given substance may be suited for use in a particular case.

Rule 2 requires that suitable tests for the determination of the composition, identity and purity of any preparation submitted shall be supplied and, in the case of mixtures, for the determination of the amount and activity of their potent ingredients. This rule is rather of indirect value to you, for you will seldom have either desire or opportunities to carry out the tests given. But it affords you the security of knowing that there are such tests to insure the identity and uniformity of the preparation as well as its activity. The fact that they are made public alone goes a long way toward insuring that the article as marketed is always the same. In addition, the Council applies such tests from time to time to samples obtained in the open market, and if they are found wanting in any respect, the manufacturers are warned of this fact, with the understanding that a failure to correct it may lead to the exclusion of the article from the list of accepted drugs.

Rule 3 calls for the rejection of all preparations which are advertised directly to the public. To this rule, however, there are two exceptions. The first permits the advertisement of disinfectants and germicides if this is restricted to "conservative recommendations

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for their use as prophylactic applications to superficial cuts and abrasions of the skin and to the mucous surfaces of the mouth, pharynx and nose." The second exception allows the advertising in an unobjectionable manner of nonmedicinal food preparations. This rule is of great value to the public. But it is not less so to you, for those who have worthy preparations are usually very desirous of having them included in N. N. R., and the mere fact that you may see a preparation advertised to the general public stamps it at once as one which is excluded from recognition by the Council and one which is in all probability in some respect fraudulent or else worthless.

Rule 4 serves to extend the scope of Rule 3 in preventing indirect advertising to the layman by forbidding admission to any preparation of which the label, package or enclosed circular contains the names of the diseases or conditions for which it is recommended. This guards you against becoming the unwilling agent of the manufacturer by placing in a patient's hands information which might lead him to self-medication with the particular preparation. This method of using the physician to advertise a proprietary medicine has been very greatly abused in the past, and its correction is a matter of much relief to the conscientious physician.

Rule 5 covers the question of false claims as to the origin of the material from which the preparation is made, and requires in addition that the name of the actual manufacturer must be furnished to the Council. The need for this rule may not be apparent to you at first, but when I mention that only a few years ago there were many persons engaged in the "patent medicine" business who were offering worthless or harmful mixtures under catchy names, often claiming that they were new synthetic drugs, and that often these persons merely engaged some pharmaceutic house to prepare these mixtures, which they then sold at fabulous prices, you will readily see how great an abuse this form of fraud could become. It had, in fact, become one of the greatest of all abuses in the field of proprietaries. Such mixtures of acetanilid, caffein and sodium bicarbonate as "antikamnia" were for years thought by many physicians to be true synthetics for which they would make their patients pay fancy prices on account of their own ignorance.

Rule 6 refuses admission to N. N. R. of any preparation for which exaggerated, unwarranted or misleading therapeutic claims are made. A reasonable degree of optimism is permitted the manufacturer, but this is never allowed by the Council to be carried beyond proper bounds. It used to be the practice of almost every manufacturer of a new drug to make the most extravagant claims regarding its value, all mention of any of its disadvantages being scrupulously avoided. Under Rule 6 of the Council, the claims for many articles have been so greatly modified that there is little left to recommend them, but the physician is in a far better position to determine whether or not they may be of service to him.

The seventh rule guards against possible accident by requiring the principal label on any article which contains potent or poisonous substances to bear a statement of the amount of such substances in a given quantity of the preparation.

Rule 8 calls for the naming of a preparation in a manner which shall be sufficiently descriptive of its composition, either chemical or pharmaceutic. It also refuses recognition to such articles as bear objectionably suggestive names, or such as imply the diseases or conditions for which the preparation is recommended.

A further means of protection against fraud is provided by Rule 9, which requires that the patent numbers, or those of the registered or copyrighted names, shall be supplied to the Council, and that a copy of the protected label of the preparation shall be filed with the Council.

Lastly, Rule 10 rejects all mixtures which are either unscientific or useless, or which are "inimical to the best interests of the public or of the medical profession."

OTHER CONSIDERATIONS

From what has gone before, I think that you must now have some idea of one of the difficulties which will confront you as practitioners, and I hope that you will also see and appreciate the value of the help which is given you in the solution of this difficulty by the work of the Council on Pharmacy and Chemistry which has led to the preparation of N. N. R. This is not, however, the only service which the Council is rendering. Certain of the worst frauds which are being perpetrated from time to time on the medical profession are being run down, and accounts of them appear every little while in THE JOURNAL of the American Medical Association. A volume is also published annually, in which will be found the reports of the Council on those preparations which have been refused acceptance for inclusion in N. N. R., and the reasons for their rejection are there clearly set forth.

The question will arise in your minds as to what you are to do when you find that a certain preparation is not mentioned in the latest volume of N. N. R. In general, you may feel fairly certain that if it is not mentioned it is because it is not acceptable on account of conflict with one or more of the rules just mentioned. It is, of course, not possible for the Council to examine into the claims of every new preparation, but it should be said that it has so far covered nearly, if not quite all of those preparations which have any genuine claim for consideration. Such, therefore, as are not to be found in N. N. R. may be presumed to be offenders in some respects, unless, of course, they have been too recently introduced to have come under consideration. (An inquiry sent to the secretary of the Council will disclose the status of any article.)

In addition to the facts which I have already brought out concerning the material in N. N. R., I would also call your attention to certain concise discussions given in it on the pharmacology, pharmacy and toxicology of various classes of preparations. The limits of dosage and the information which will enable you to combine the new preparations in suitable prescriptions are likewise to be found in this volume.

Today, upon the eve of your graduation into the practice of medicine, I have taken this occasion to tell you something of the potential value which the book New and Nonofficial Remedies holds for each of you. I hope that you will all make constant use of it; that you will learn that it is an honest and unbiased adviser ever at your hand; and I feel sure if you do call on it for help as frequently as the occasions may arise that you will come to think that I have done it but poor justice in my attempts to show you something of its inestimable value.

414 East Twenty-Sixth Street.

THE ONSET OF HUNGER IN INFANTS AFTER FEEDING

A CONTRIBUTION TO THE PHYSIOLOGY OF THE STOMACH *

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AND
A. J. CARLSON, PH.D.
CHICAGO

Pediatricians differ as to the incidence of hunger in infants, because up to the last few years there has been no certain objective criterion for the existence of hunger. This has led to varying views and practices in regard to the frequency with which infants should be nursed. Those favoring the two-hour interval for the first month are Budin, Burnet, Chapin, Cotton, Dodson, Fowler, Heubner, Holt, Rachford and Webster. Ahlfeld, Kerley and Koplik advocate two and one-half to three hour feedings. Among exponents of the three-hour interval are DeLee, Feer, Finkelstein, Lamb, Langstein, Meyer, von Pirquet and Williams. Abt believes in a three-hour to four-hour interval; while Brenneman, Czerny, Grulee, Jascke and Keller designate four-hour periods.

Fig. 1.—Infant, 14 days old, finished nursing at 9:05 a. m.; beginning of gastric hunger contractions 11:10 a. m. (chloroform manometer).

It is now established that the subjective sensation of hunger is caused by a certain type of contraction of the fundal end of the empty stomach stimulating sensory nerves in the wall of the stomach.[1]

Since the contractions peculiar to the cardiac and fundal ends of the empty stomach are, in normal individuals at least, an objective index of hunger, the balloon method may enable one to determine the time of onset of hunger in infants after previous feeding, and the answer to this question may aid in fixing the time that should elapse between the nursings of normal infants.

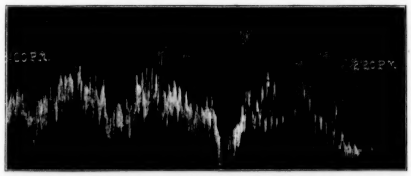

Fig. 2.—Infant, 4 days old, finished nursing at 11:50 a. m. Tracing shows end of period of gastric hunger contractions at 2:30 p. m. (chloroform manometer).

METHOD AND RESULTS

The experimental procedure is recorded in a previous publication.[2] The observations were made on thirty normal infants, from 24 hours to 4 weeks old. Introduction of the balloon into the stomach directly after nursing leads to vomiting of the balloon and some of the food. The balloon is readily retained from forty-five minutes to one hour after feeding. The accompanying tracings were obtained from infants who were asleep or otherwise quiet, since inhibition of the hunger contractions results when the child is restless.

Fifty-five observations were made on thirty infants. The average time between nursing and the appearance of the period of hunger contractions was two hours and forty minutes, with a maximum of three hours and thirty minutes, and a minimum of two hours and twenty minutes.

Our tracings show that when the stomach is full of food the inflated balloon in the fundus reveals practically no contractions. As the stomach gradually empties, feeble tonus contractions appear, and increase in rate and intensity until they end in a period of typical hunger contractions from two and a half to three hours after the previous nursing. This change of the tonus contractions of the fundic end of the stomach partly filled with food into the hunger contractions of the empty stomach have already been demonstrated for the adult by Rogers and Hardt.[3] Pisek and Le Wald[4] have shown by roentgenogram experiments that "three hours is practically the emptying time of a child's stomach and often less than that." Czerny,[5] Leo[6] and Pipping[7] conclude that the stomach of a normal infant empties itself in from about one and a half to two hours. The time required for emptying of the stomach depends, of course, on the quantity of the food as well as on the rate of the gastric secretion and the vigor of the gastric digestion peristalsis.

In this connection it may be of interest to note that the mammalian infant, except when under the strict control of a pediatrician, feeds, on the whole, as soon as the hunger sensation is strong enough to be uncomfortable, provided food is at hand, and he thrives on this procedure; while the infant whose routine is ordered by the pediatrician nurses every two, three or four hours, irrespective of the onset or intensity of the periods of hunger. Of course, a certain period of rest for the gastric glands may be beneficial.

SUMMARY

The infant's stomach shows feeble tonus contractions of the fundal end, one hour after nursing. As the stomach discharges its contents these tonus undulations gradually increase in frequency and intensity until by the end of from two and a half to three hours these become transformed into vigorous hunger contractions. The time of onset of hunger contractions after

* From the Presbyterian Hospital and the Hull Physiological Laboratory of the University of Chicago.

1. Carlson, A. J.: Am. Jour. Physiol., 1913, xxxi, 175.
2. Carlson and Ginsburg: Am. Jour. Physiol., 1915, xxxvi.
3. Rogers and Hardt: Am. Jour. Physiol., 1915, xxxvi, 354.
4. Pisek and LeWald: Infant. Stomach, Tr. of Am. Pediat. Soc., 1913, xxv, 150.
5. Czerny, A., and Keller, A.: Ernährung, Ernährungstörungen und Ernährungstherapie des Kindes, Leipzig and Vienna, Franz Deuticke, 1906, i, 57, 58.
6. Leo, H.: Berl. klin. Wchnschr., 1888, xxv, 981.
7. Pipping, W.: Thesis, Helsingfors, 1891.

the previous feeding varies for each infant. In our present series the minimum is two hours and the maximum three hours. The hunger contractions of the empty stomach are modified tonus waves of the fundus of the digesting stomach, as shown by Rogers and Hardt.

In the normal individual the presence of vigorous hunger contractions is probably a biologic evidence that the stomach is in proper condition to receive food. If this is the case, the stomach of a normal infant is ready to receive food from two to three hours after the previous nursing.

OVARIAN TRANSPLANTATION *

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AND
M. E. LEE
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Transplantation of human ovarian tissue with varying degrees of success has been reported and is occasionally practiced. For the most part the operation has been performed with a view of preservation of its internal secretory function. Many case histories have been reported which indicate that in this way the operation is frequently successful. In 1906 Morris[1] reported the birth of a child in a woman from whom the ovaries were removed and in whom ovaries from another woman were engrafted four years previously.

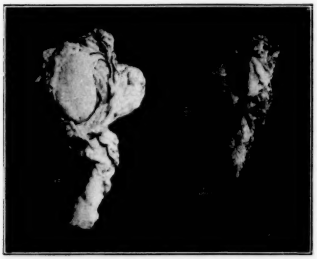

Fig. 1.—Engrafted ovaries, natural size.

Fig. 2.—Low power photomicrograph, showing free relation of transplanted ovary to fallopian tube; *A*, fallopian tube; *B*, fimbriated extremity of fallopian tube; *C*, ovary.

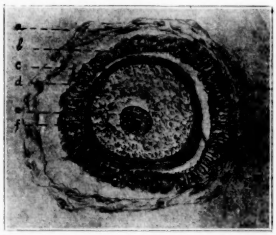

Fig. 3.—Camera lucida drawing of graafian follicle in right engrafted ovary; the structures are all normal in appearance; *a*, theca folliculum; *b*, corona radiata; *c*, zona pellucida; *d*, ova; *e*, germinal vesicle; *f*, germinal spot. Schron's granules were observed.

For general biologic reasons, but particularly with the view of studying heredity, numerous attempts have been made to engraft ovarian tissue into animals and birds. Prior to 1894, Romanes[2] made many experiments in endeavoring to transplant ovaries in rabbits and dogs. His results were uniformly unsuccessful.

Gregorieff[3] in 1897 reported pregnancy in four rabbits from which the ovaries were removed and replaced.

Magnus[4] in 1907 reported the birth of young by a black rabbit whose ovaries had been removed and replaced with those from a white rabbit. The coat markings of the young indicated a soma or foster-mother influence.

Guthrie[5] in 1907 successfully transplanted ovaries from hen to hen. Such fowls laid eggs which were hatched. Chicks thus obtained showed evidence of foster-mother influence.

From experiments on rats, Marshall and Jolly[6] in 1908 stated that (1) ovarian autografts succeed better in the kidney than in the peritoneal cavity; (2) ovarian isografts succeed less readily than autografts; (3) isografts are more successful between nearly related than between distantly related individuals, and (4) it is not necessary to create a deficiency—that is, remove ovarian tissue—in order to achieve such success. Their work was largely based on preservation of histologic structure in transplanted tissue.

Ribbert[7] in 1898 reported preservation of structure in guinea-pig ovarian tissue removed and replaced.

Castle[8] and Guthrie[9] in 1909 obtained young from guinea-pigs whose ovaries had been removed and replaced with ovaries from other guinea-pigs.

The results reported in this paper were obtained on dogs.

Two sister puppies 3 months old were operated on, the ovaries in each case being removed and transplanted into the other animal. At this time the organs measured about 6 mm. in length. The animals were operated on simultaneously. Each ovary was exposed and its pedicle firmly grasped throughout its entire extent by curved forceps. A fine silk thread was then passed through the base of the ovary by means of a cambric needle. The ovary was then completely separated from the pedicle with a knife. It was then instantly transferred to the other animal and fastened to the pedicle of the former ovary by means of the thread previously inserted into its base.

The animals made uneventful recoveries and appeared the same as dogs not operated on. One was lost, while the other was killed through accident

* From the University of Pittsburgh, School of Medicine.

1. Morris: Med. Rec., New York, 1906, lxix, 697.
2. Romanes: Darwin and After Darwin, 1906, ii, 143, 144.
3. Gregorieff: Centralbl. f. Gynäk., 1897, xxi.
4. Magnus: Norsk Mag. f. Lægevidensk., 1907, No. 9.
5. Guthrie: Proceedings of the Society, Am. Jour. Physiol., xix, pp. xvi, xvii.
6. Marshall and Jolly: Quart. Jour. Exper. Physiol., i, 2.
7. Ribbert: Arch. f. Entwcklngsmechn., 1898, vii, 668.
8. Castle: Science, 1909, xxx, 312.
9. Guthrie: Science, 1909, xxx, 724.

eighteen months after operation. The animal was in good condition.

There were slight peritoneal adhesions between the intestines and the anterior wall of the abdominal cavity at one point along the line of incision. The right ovary appeared normal and was much larger than at the time of transplantation (Fig. 1). It was whitish pink and showed a few dark spots. The left ovary was represented by a cystlike mass the size of a navy bean. It was dark in color and soft to the touch. When the capsule, which was markedly thickened, was opened, a small gelatinous mass was found. It was clear to pale yellow, and measured about 10 by 4 by 2 mm.

The lumen of the upper end of the right fallopian tube appeared to be somewhat narrowed. Communication between the fimbriated extremity and the ovary was unobstructed (Fig. 2). The lumen of the left fallopian tube was patent.

Histologic examination of the right ovary revealed abundant normal histologic elements (Fig. 3), including corpora luteum (Fig. 4). The left ovary had undergone complete colloidal degeneration, at least so far as the reproductive elements were concerned.

Fig. 4.—Camera lucida drawing of a few cells of a corpus luteum in the right engrafted ovary.

As no attempt at mating the animal was made, the experiment is not conclusive as to the possibility of pregnancy.

The result leads us to believe that ovarian transplantation in dogs is not only feasible but also offers a promising means of obtaining information regarding optimum conditions for success as well as heredity.

SYPHILIS OF THE STOMACH

A REPORT OF EIGHT CASES WITH ROENTGENOLOGIC FINDINGS *

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It is generally stated in textbooks on diseases of the stomach that syphilis of this organ is of rare occurrence, and that it is found in scarcely more than 1 per cent. of patients afflicted with the disease. The advent of routine blood examinations, however, and the great advance made in the diagnosis of all gastro-intestinal lesions by the use of the Roentgen ray prove that this contention can no longer be held.

Since June 1, 1913, eight cases of syphilis of the stomach, in which the diagnosis was established with a fair degree of certainty, have been admitted to the ward service of St. Luke's Hospital. Five of these patients suffered from the symptoms of obstruction, and according to the assignment of cases by region, in effect since that date, were referred to one of us (W. A. D.) for operation. The other three were cared for in the medical service, as no indication for surgical intervention existed at the time.

Syphilis appears in the stomach as a late manifestation of the disease in both the congenital and the acquired types. Jerome Meyers[1] states that the age in the youngest recorded case of the acquired form is 18 and the oldest 60. In the congenital cases, gummas have frequently been found at necropsy in the stomach of the new-born.

The ages in our cases were 14 and 17 in the congenital type and 22, 23, 34, 42, 62 and 63 in the acquired.

Diffuse syphilitic gastritis has been described, and histologic examination in such cases has shown the changes of generalized gummatous infiltration of the submucosa. In the great majority of instances, however, the disease appears in the form of localized gummas, either single or multiple. The lesions may be situated in any part of the stomach, but seem to occur most frequently in the pars pylorica, involving either the lesser or greater curvatures, or both. The gummatous deposits are described by pathologists as starting in the submucosa and spreading gradually to the other coats. These deposits pass through the stages of infiltration, ulceration and cicatrization, in varying degrees. One portion of the wall may remain infiltrated while another passes on to ulceration or may become cicatricial. Definite pyloric stenosis may occur either as a result of the gummatous infiltration, cicatrization of the ulcer or perigastric adhesions. Obstruction from the combination of these conditions necessitated operation in five of our cases. Besides the lesions in the stomach wall, other syphilitic manifestations are usually present, such as marked perigastric adhesions, changes in the liver capsule and gummas of the liver, and extensive involvement of the gastrohepatic and gastrocolic lymph glands, as well as other constitutional and local evidences of the disease.

The symptoms of gastric lues when considered in a general way differ very little from those of other lesions of the stomach of equal extent and like location; but when carefully analyzed, several striking differences become apparent. To begin with, the pain lacks the periodicity of the average simple ulcer—it is not so much influenced by the taking of food and is frequently referred to as gnawing in character; it is, however, persistent, and was an important symptom in the cases observed by us. Vomiting was a marked symptom in our cases almost from the beginning. This is probably accounted for early, by the gummatous infiltration, and later on, by the cicatrization and adhesions, possibly too, indirectly from the disturbed liver function. Although small quantities of blood have been found in the gastric analyses of the cases, and a few claim to have had tarry stools, hemorrhage has not been so frequent or severe as in simple ulcer; this is especially striking when the long history of many of the cases is taken into consideration. Our observation in this respect corresponds with the experience of Fenwick,[2] who states

* From the Surgical Service and Roentgen-Ray Laboratory, St. Luke's Hospital.

* Read before the New York Surgical Society, March 24, 1915.

* Because of lack of space, this article is abbreviated in THE JOURNAL by omission of some of the case reports and illustrations. The complete article appears in the authors' reprints. A copy of the latter will be sent by the authors on request.

1. Meyers, Jerome: Albany Med. Ann., October, 1912.
2. Fenwick, and Soltau, W. S.: Cancer and Other Tumors of the Stomach, Philadelphia, P. Blakiston, Son & Co., 1902, p. 313.

that the infrequency of hematemesis in these cases helps to differentiate them from simple ulcers. On the other hand, Lockwood[3] reports a fatal case from hemorrhage. The predominating feature of the disease clinically is the extreme loss in weight, which in one of the cases here reported amounted in eighteen months to one half of the patient's former weight.

Gastric analysis was omitted in Case 5, on account of constant vomiting and disinclination on the part of the patient. In Case 6, there is no record that an analysis was made. In Cases 1, 7 and 8, the examination showed absence of free hydrochloric acid and a combined acidity of 32, 16 and 14, respectively. In these cases there was extensive involvement of the stomach wall as shown by the roentgenograms and in Case 1 by operation. In Cases 2 and 3, in which the symptoms were those of pyloric stenosis and the lesions were demonstrated at operation to be at the pylorus, free hydrochloric acid was 30 and 36, with a combined acidity of 52 and 70; while in Case 4, in which there was hour-glass contraction with constriction at the pylorus, the analysis showed free hydrochloric acid 13, total acidity 34. Lactic acid was absent in every case. The guaiac test for blood was positive in five cases. While these findings are in no wise conclusive, they would seem to suggest that there is absence of free hydrochloric acid, and a low total acidity in the cases, with extensive involvement of the gastric mucosa unaccompanied by special involvement of the pylorus, and that the distinctive pyloric stenosis type without diffuse infiltration of the mucosa shows the usual findings of ulcer in that region.

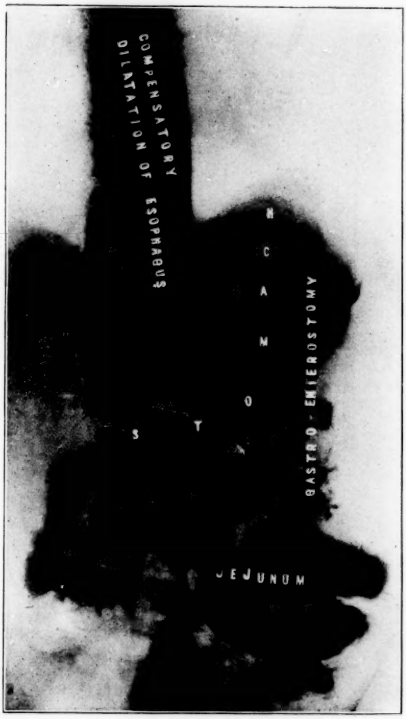

Fig. 1 (Case 1).—Girl, aged 14. Note dumb-bell-like appearance due to sclerosis of body of stomach. After gastro-enterostomy, most of food going through opening, but enough passing through stenosed portion to outline it. Note compensatory dilatation of esophagus.

The diagnosis of gastric syphilis can be established without much doubt if the history and clinical findings are given proper consideration. In the congenital cases, the family history and the early history of the patient, his general development and appearance and other syphilitic stigmata with symptoms of gastric disturbance are very suggestive, while in the acquired cases a definite history of infection may be established. In both instances, the course of the disease differs from the simple type of ulcer, in that it is influenced but little by dieting and the ordinary methods of treatment, and it is unlike malignancy in that there is not the steady and continuous progress to a fatal termination. With such a history and due consideration given to the symptoms previously enumerated, the added evidence of a positive Wassermann reaction and the roentenographic findings of deformity of the stomach make the diagnosis practically certain. Finally, the value of the therapeutic test must be given due weight. That mixed treatment and salvarsan will produce temporary improvement in old ulcers or even certain cancer cases there is no doubt, but the benefit is of short duration, where, as in the class of cases under consideration, there is a return to normal health; and if the lesion in the stomach has not reached the cicatricial stage, this organ may be restored to its former condition.

Two of our cases were of the congenital type, two gave definite histories of chancre and in one the husband gave a positive Wassermann. The history as to primary infection in the remaining three was negative. The Wassermann reaction was four plus positive in every case. Roentgenograms showed definite changes in the shape and size of the stomach in six cases, and in the other two demonstrated a marked degree of pyloric stenosis. The deformity in the stomachs varied from an irregularity along the curvatures to hour-glass contracture, and in one case to extreme distortion, giving the appearance not unlike that of a dumb-bell. Response to treatment has been astonishing in each case, and bears witness to the value of the therapeutic test.

The pathologic diagnosis of syphilis of the stomach is even more difficult to establish with certainty than the clinical diagnosis, as syphilitic infiltration so closely resembles tuberculosis. In two of our series, Cases 4 and 5, specimens were removed for microscopic examination. In Case 4 a nodule the size of an almond was removed from the surface of the liver, which was studded with such tumors varying in size from a pea to a walnut. Macroscopically, this was a typical syphilitic liver. Dr. Wood, pathologist to St. Luke's Hospital, did not feel justified in making a positive report of syphilis from the morphology.

A fair sized piece of gastric mucosa and an omental gland 1.5 by 0.6 cm. were removed from Case 5 for examination, and the report on the sections from the

3. Lockwood, G. R.: Diseases of the Stomach, Philadelphia, Lea and Febiger, 1913, p. 305.

mucosa states that the diagnosis must remain in doubt with the probability that the condition is syphilis rather than tuberculosis. Sections of the gland showed simple inflammatory reaction. (For detailed pathologic report of these two cases, see histories.)

Roentgen-ray findings in syphilis of the stomach may be divided into three classes: first, a fairly typical change consisting of a diminished size and dumb-bell-like appearance of the stomach due to deformity caused by infiltration involving the middle or pyloric half of the stomach, this portion representing the handle of the dumb-bell. In this type the pyloric sphincter may be involved and held open so that the stomach empties, or at least begins to empty in a very rapid manner, such as has been observed in carcinomatous infiltration of the pylorus where the pylorus is held open, or in spontaneous or artificial gastro-enterostomy. But even though the stomach begins to empty in a very rapid manner, there may be a trace of food remaining high up at the cardiac end at the sixth hour.

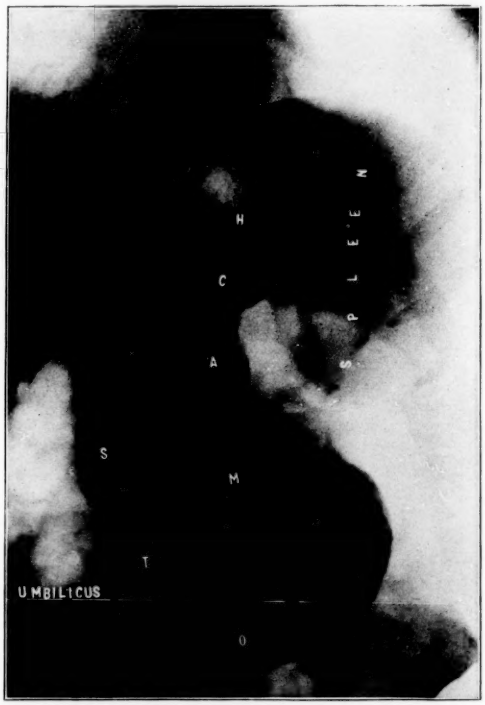

Fig. 2 (Case 4).—Woman, aged 34. Note hour-glass constriction with long channel between pouches. Condition confirmed at operation and relieved by breaking up of perigastric adhesions and performance of gastro-enterostomy to the lower pouch.

Secondly, the findings may be similar to those in the first type except that the involvement of the pylorus or the extreme stenosis of the infiltrated portion of the body of the stomach may cause delay in the emptying of the stomach such as occurs in ulcer or carcinoma.

In both the first and second types, however, the stomach appears to be smaller than normal, and there is apt to be a tendency to compensatory dilatation of the esophagus to make up for the diminished capacity of the stomach.

In the third type the infiltration may involve only the pyloric region, in which case the findings may resemble closely those found in cicatrized ulcer in this region and may be accompanied by dilatation of the stomach.

The treatment of gastric syphilis is, strictly speaking, medical; and if the diagnosis could be made while the disease is in the stage of infiltration, there should be no complications requiring operative intervention. Even though the pylorus is encroached on in the early stage, there is reason to believe, from the rapid response to proper treatment in nearly all reported cases, that stenosis of any extent or duration could be easily prevented. However, when ulceration and cicatrization have taken place, surgical measures play an extremely important rôle in the treatment of this condition, and should not be too long postponed. Three cases, 6, 7 and 8, showed little or no obstruction by Roentgen examination, and for this reason the question of operation was deferred until after vigorous antiluetic treatment had been given a trial. There was immediate response in each case, and now, from six to eighteen months later, all three patients are in good health. It will be noted from the histories of these patients that pain was the most prominent symptom, and not vomiting, as was the rule in the obstructed cases. Persistent vomiting with increasing loss of flesh and strength is by far the most frequent complication requiring operative relief. Gastro-enterostomy best meets the indication, and was the operation employed in five of the cases here reported. In three instances, involvement of the stomach wall was so extensive that it was difficult to find a fit place to make the anastomosis. Jejunostomy should be borne in mind, and would be preferable to a difficult gastro-enterostomy in a bad risk. Pylorectomy and the excision of ulcers are usually contraindicated on account of coexisting lesions. The former operation could have been performed in Case 2, but the presence of tabes seemed to be sufficient contraindication. In Case 3, also of the pyloric stenosis type, there was marked fixation to the liver and the man was in poor condition; but we so placed the anastomosis that a two stage operation could be undertaken. Improvement was so rapid and satisfactory that the patient refused a second operation. We are aware of the fact that all gastric ulcers, syphilitic or otherwise, have potential dangers, and for this reason the question of resection should be considered in every suitable case. If there is sufficient evidence, however, to make a diagnosis of syphilis of the stomach, no case should be subjected to more than the simplest form of operation

necessary to relieve urgent symptoms until after antiluetic treatment has been given a reasonable trial.

SUMMARY

Syphilis of the stomach occurs much more frequently than was formerly supposed. The Wassermann reaction and roentgenologic examinations have provided the missing data necessary to establish the diagnosis. These aids to diagnosis should be applied in every case of disease of the stomach. If the diagnosis is made reasonably early, antiluetic treatment should control the symptoms; if not made until late in the disease, surgical intervention may become necessary to relieve complications.

REPORTS OF CASES

CASE 1.—*History.*—H. D., girl, aged 14, admitted to St. Luke's Hospital, June 10, 1913, whose father was living and whose mother had died of apoplexy, had never been strong; she had had more or less pain in stomach after eating as long as she could remember. For two years the eating of solid food had caused vomiting and severe pain; she lived on fluid diet six months and now swallowing of liquids caused pain and was frequently accompanied by vomiting; she never vomited blood. Examination revealed emaciated body with sallow skin; eyes negative; bad teeth; palpable glands in postcervical chains; lungs normal; heart showed a systolic murmur. Abdomen retracted, not tender on palpation, liver palpable 3 cm. below the costal margin; spleen enlarged. Extremities normal. Weight 52 pounds. Test meal showed free hydrochloric acid 0, total acidity 32, blood positive. Wassermann reaction four plus positive. Hemoglobin 50 per cent.

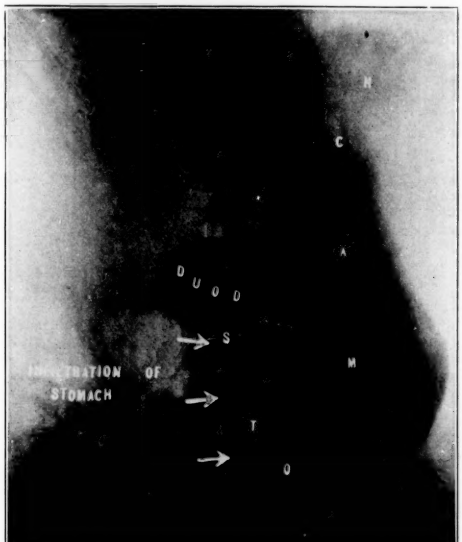

Fig. 3 (Case 5).—Woman, aged 23. Note deformity at pyloric third of stomach due to sclerosis. Note close resemblance to new growth. Diagnosis of syphilis confirmed by operation and microscopic examination of section of stomach wall. Symptoms relieved by gastro-enterostomy, but deformity persisted.

Roentgen Examination.—The food passed into the cardiac end of the stomach, which it soon filled, and then backed up into the esophagus; only a trace passed through a very long, narrow, stenosed portion of the stomach extending from the cardiac end to the pyloric region, where a slight pouch was then evident. This gave a peculiar dumb-bell-like appearance to the stomach outline—one portion of the dumb-bell being formed by the cardiac end and the other portion by the pyloric end with a long narrow handle part of the dumb-bell between. The patient was then studied carefully in various positions, and the deformity of the stomach found to be constant. The stomach failed to empty itself within six hours. The following day a confirmatory examination was undertaken, and showed that the peculiar deformity of the stomach persisted. The patient was then admitted to the hospital and a third examination was made of the stomach, which confirmed the finding of stenosis of the body of the stomach producing dumb-bell-shaped deformity. Syphilis of the stomach was suggested as a possible diagnosis from the Roentgen examination.

Operative Indication: Persistent vomiting due to deformed stomach.

Operation.—July 12, 1913, a posterior gastro-enterostomy to the cardiac pouch was done with considerable difficulty owing to adhesions and size of pouch. Recovery was uneventful; no vomiting occurred until the tenth day. This was due to taking food in too large quantities and was relieved by properly regulating feedings.

Pathologic Findings.—The middle half of the stomach is occupied by an infiltrated mass which has practically destroyed the lumen. The greater curvature is drawn up to the lesser. There is a small pyloric pouch which connects with a moderate-sized cardiac pouch by a long narrow channel into which a finger cannot be invaginated. At some points the wall is infiltrated and has a doughy feel, while other portions are hard and fibrous. The wall of both the cardiac and pyloric pouches is thickened. There are many perigastric adhesions. The liver is enlarged and grayish.

Two weeks after operation the patient was referred for Roentgen examination on account of vomiting. This examination showed that the gastro-enterostomy was working satisfactorily, but that the child was overtaxing the capacity of the stomach by taking too much food as she began to improve in health and appetite. It was plain to see from the Roentgen ray that food backed up into the esophagus owing to its being taken in greater quantities than the gastro-enterostomy could take care of (Fig. 1). Based on this examination, feeding in smaller quantities but at more frequent intervals was advised. Vomiting ceased and gain in weight followed. The patient was examined at intervals of several months up to the present time. The deformity of the stomach persisted, but the gastro-enterostomy worked perfectly, taking most of the food from the stomach; but gradually more of the food appeared to be going through the pylorus, suggesting that possibly some of the stenosis was being relieved by the antisyphilitic treatment. The constipation, which was a marked feature in the case before the operation, has been entirely relieved, and this is borne out by the passage of the bismuth meal through the colon in normal time. The last examination, made Feb. 11, 1915, one year eight months after gastro-enterostomy, showed that there was now very little tendency to backing up into the esophagus.

The patient was discharged July 17, 1913. On being examined Feb. 11, 1915, the patient was found to have gained 20 pounds in weight, was eating solid food, and was improved in every way.

CASE 4.—*History.*—G. R., widow, aged 34, admitted to St. Luke's Hospital, Jan. 4, 1915, had a negative previous history, two children and no miscarriages. Ten years ago she had a severe attack of epigastric pain with vomiting of blood; one

year later she noted a swelling in the abdomen just to the right of the umbilicus. She had had attacks of pain in the upper abdomen from time to time which had no relation to the taking of food, usually radiating to the back and frequently requiring morphin; she had had attacks of vomiting at irregular intervals; the vomitus usually consisted of food recently taken and did not contain blood. One attack of jaundice occurred about five years ago. The swelling on the right side had increased in size until now she could feel a mass the size of an orange, not tender, and there was only occasional pain in this region. Her general appearance was that of a poorly nourished woman appearing many years older than the age given; color bad; eyes negative; heart and lungs normal. Liver edge palpable 1 cm. below the costal margin. In the right upper quadrant was a rounded tumor mass the size of an orange which moved with respiration, seemed to be attached to the liver, and was slightly tender. Reflexes normal. Weight 116 pounds. Wassermann reaction four plus positive. Tuberculin reaction negative. Fasting stomach showed 65 c.c. of greenish fluid containing mucus and strands, small particles of food and blood clots. Bile plus, lactic acid 0, free hydrochloric acid 13, total acidity 34.

Roentgen Examination.—This revealed the stomach as having the appearance of being deformed, of an hour-glass-like appearance. The lower pouch of the stomach appeared to be dilated and reached to a point 1 inch below the umbilicus, the upper half very much narrowed (Fig. 2). (There is a distinct shadow indicating an enlarged spleen.) The pyloric region appeared to be somewhat deformed, suggesting a spasmodic condition or *pressure*. At the sixth hour there was a large residue in the stomach, the shadow of which measured 4 by 3 inches. At the twenty-fourth hour there was still some bismuth remaining in the stomach.

Operative Indications: Hour-glass stomach with retention; abdominal tumor probably distended gallbladder.

Operation.—Jan. 13, 1915, a posterior gastro-enterostomy to distal pouch, cholecystectomy and division of perigastric adhesions was performed, with excision of the nodule from liver. As the cardiac pouch was small and difficult to expose, and the channel connecting the pouches sufficiently wide to admit three fingers, it seemed best to unite the intestine to the distal pouch.

Pathologic Findings.—The stomach was exposed with considerable difficulty, as it was adherent to the parietal peritoneum and the under surface of the left lobe of the liver. The anterior wall and greater curvature of the stomach showed an extensive cicatrix resulting from an ulcer which gave the appearance of having healed at one part and still being active at another.

The perigastric adhesions, together with the ulcer, had formed an hour-glass constriction, which was situated at the junction of the upper and middle thirds of the stomach. Division of the adhesions resulted in liberating the stomach to the extent that a channel was formed between the pouches which would admit three fingers. The pyloric end of the stomach was bound to the under surface of the right lobe of the liver by adhesions and would barely admit one finger. The gallbladder was distended to the size of a large pear; the cystic duct was occluded by a single stone; the liver was enlarged, the capsule thickened, containing many nodules varying in size from that of a pea to an English walnut.

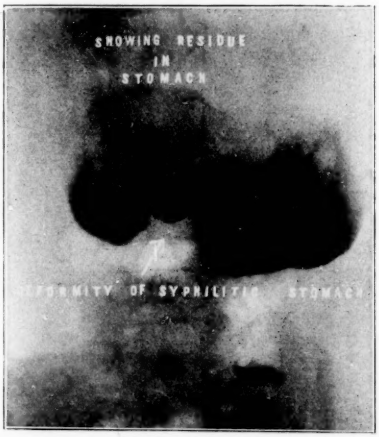

Fig. 4 (Case 6).—Boy, aged 17. Note deformity at junction of pyloric and middle thirds of stomach. This case responded to medical treatment, but the deformity remained.

Convalescence was straightforward. March 19, 1915, the patient had gained 20 pounds and felt well. Roentgen examination showed the gastro-enterostomy working satisfactorily, but the deformity of the stomach persisted.

Pathologic Report.—Sections from liver show marked degeneration and areas of necrosis of the parenchyma. There is marked general infiltration with round cells and many structures showing tuberclelike masses which contain giant cells of the Langhans type. There is moderate connective tissue proliferation, and occasional areas showing granulation tissue of the tuberculous type, with many endothelial cells and areas of caseation. Multinucleated giant cells are not found except in the tubercles. No tubercle bacilli are found in sections stained with carbolfuchsin, and no *Spirochaetae pallidae* in Levaditi preparations. The liver substance is almost entirely replaced by the growth, and the diagnosis must be left in doubt with the probability that the condition is syphilis rather than tuberculosis.

Case 5.—*History.*—F. G., woman, aged 23, admitted to St. Luke's Hospital, Jan. 15, 1915, had been married three years, and had one child, and no miscarriages. For the past eight months she had had an aching pain and sense of epigastric distress coming on immediately or within half an hour after eating, accompanied by nausea and sometimes vomiting, which relieved the pain. This pain radiated into the neck and toward the umbilicus. For the past two months she had vomited constantly; there was no blood in the vomitus or stools; the patient was hungry, but could not retain food. She had lost 22 pounds in the past eight months. Her general appearance was that of a poorly developed, emaciated woman. Palpable cervical lymph nodes; systolic murmur at the apex; right lung dull at apex. Breath sounds harsh and high-pitched, expiration prolonged. A few sibilant râles at base. Abdomen scaphoid and tender at costovertebral angles. Palpation showed a firm indefinite mass in the epigastrium above and to the left of the umbilicus. Knee jerks absent. Weight, 88 pounds. Wassermann reaction four plus positive. Tuberculin reaction negative. No report on gastric contents. Wassermann on husband showed four plus positive.

Roentgen Examination.—This revealed a peculiar break in the bismuth shadow at the pyloric end of the stomach; further examination showed the peculiar filling defect in the pyloric end of the stomach to be permanent, indicating some infiltration of the stomach wall very much as occurs in a new growth (Fig. 3). At the sixth hour there was a distinct residue in the stomach, the shadow of which measured 1½ inches in diameter. The filling defect still persisted in the pyloric end of the stomach, especially along the greater curvature. At the twenty-fourth hour there was a trace of bismuth still remaining in the stomach.

Operative Indications: Pyloric obstruction with persistent vomiting.

Operation.—Jan. 27, 1915, a posterior gastro-enterostomy was performed, with excision of gland and portion of stomach wall for examination.

Pathologic Findings.—Extending from the middle of the greater curvature to the pylorus was an irregular mass involving the entire thickness of the stomach wall in such a way as to pucker the pyloric portion of the stomach, thereby causing stenosis of the pylorus. This mass was doughy in feel and the

peritoneum covering it was edematous. There were numerous glands in the gastrocolic omentum, the greater omentum and about the greater curvature. No special changes were noted in the appearance of the liver.

Convalescence was straightforward with mixed treatment and neosalvarsan. The patient was discharged Feb. 25, 1915. Roentgen examination one month after operation showed that the gastro-enterostomy was working, but the deformity at the pyloric region of the stomach still persisted.

Pathologic Report.—Microscopic Examination: The gastric mucosa shows congestion, edema and dense cellular infiltration of the glandular structures. The glands themselves are much atrophied, especially in the deeper layers, where they are completely involved in the infiltration. Remnants of atrophic glands are found in the submucosa. Very little of the muscular coat is included in the material received at the laboratory. In the submucosa there is a very dense infiltration entirely replacing the normal structures, composed of flat endothelioid lymphocytes and diffuse tuberclelike masses. These tubercles contain large giant cells of the Langhans type. The tubercles are not quite so well defined as those seen in tuberculosis, and yet the structure is rather more rich in cells and giant cells than the ordinary gumma. The vascular lesions are not wholly characteristic of syphilis, but there is a certain amount of subendothelial proliferation, and in some places the vessels are obliterated by a growth of new endothelial cells. There is but little perivascular infiltration, especially in those areas outside of the specific lesion. Practically no necrosis is present in the lesion. Sections stained by the Levaditi method failed to show the *Spirochaeta pallida*, and no tubercle bacilli could be demonstrated. Sections from the lymph node show slight inflammatory reaction with moderate endothelial hyperplasia and distention of the lymph sinuses. The lesions in the mucosa and submucosa of the stomach are not characteristic of either syphilis or tuberculosis, but the absence of much necrosis and the diffuse nature of the infiltration, together with the vascular changes, point rather toward syphilis than toward tuberculosis. An absolute diagnosis, however, is not possible from the specimen received.

CASE 6.—*History.*—W. H., boy, aged 17, admitted to St. Luke's Hospital, Oct. 30, 1913, whose mother died of typhoid and father of arteriosclerosis, had been informed that he had inherited a certain disease from his father. For five years he had had discomfort in the region of the stomach. Eight months ago the pain became acute, but was intermittent in character, coming on two or three times a day without relation to eating. The patient had vomited at irregular intervals, but not persistently. He had no appetite, living principally on fluids. He was given four injections of salvarsan at the Rockefeller Institute beginning five weeks ago, followed by much improvement. He was able to eat more, but still suffered pain, which was attributed to a possible appendicitis. His general appearance was that of a poorly nourished boy, aged 17, but looking to be about 12. Pupils reacted sluggishly to light; teeth poor and slightly notched; cervical lymph nodes enlarged. Heart and lungs normal. Abdomen soft, normal to palpation. Knee jerks present. Weight 68 pounds. Height 5 feet ½ inch. Red blood cells 4,500,000. Hemoglobin 50 per cent.

Roentgen Examination.—This showed the stomach imperfectly filled out along the greater curvature (Fig. 4). The stomach was moderately dilated. There was a distinct residue at the sixth hour, and deformity of the pyloric third of the stomach which, with the previous findings and the history of positive Wassermann reaction, was sufficient to warrant a diagnosis of syphilis of the stomach. The patient continued on antisyphilitic treatment. He was discharged from the hospital, Nov. 7, 1913, and was referred back to the Rockefeller Institute, where he has been under continuous observation and treatment with the result that there has been a remarkable change in his condition.

Roentgen examination, March 2, 1914, showed that the deformity at the pyloric end of the stomach persisted. At the sixth hour there was a distinct residue in the stomach. March 18, 1914, the patient was again examined fluoroscopically and roentgenographically. This confirmed the findings of a deformity at the pyloric end of the stomach. There was less residue at the sixth hour than in the previous examination. March 14, 1915, Roentgen examination showed the pyloric end of the stomach still deformed, but at the sixth hour the stomach had emptied itself. At this time the weight had increased to 97 pounds; pain had disappeared and the patient was now able to eat and digest all sorts of food.

THE OPEN TREATMENT OF INFECTED WOUNDS

A PRELIMINARY REPORT

FREDERICK G. DYAS, M.D.
CHICAGO

The development of the surgical treatment of infected wounds has witnessed the use of a vast variety of substances and methods in the attempt to assist the healing powers of the individual. In the present aseptic era of surgery the treatment of an infected wound means in most cases the establishment of adequate drainage by various means and the application of voluminous dressings, either dry, sterile or moist antiseptic.

Pathology teaches us, and it is within the experience of every medical man, that the destruction of tissue caused by moist gangrene is far greater than that caused by dry gangrene. With this fundamental truth in mind I have endeavored to convert wounds, which in every way corresponded to moist gangrene, into areas of dry gangrene. Everyone is familiar with the crude methods employed by the Indians and other savage tribes for the preservation of carcasses of animals killed. These carcasses are placed high above the ground on the limbs of trees in order that the blood may drain from the muscles and that the tissue juices might be evaporated by the winds and sun. By this method meat may be preserved free from mold and putrefaction for a very long time.

It is a fundamental principle of bacteriology that heat and moisture are necessary for the growth and propagation of practically all pathogenic bacteria. Therefore, if it were possible to dry up the tissues and dehydrate the infected area, the invading organisms must be, if not entirely killed, at least greatly attenuated.

When an animal suffers a wound, usually in one of the extremities, it is a matter of common observation that the pus is licked from the suppurating area if it be within reach of the animal's tongue. No bandage is put around the affected area, which is exposed to the air and, in many cases, to the sunlight. As the result of this, one rarely sees the intensely infected wounds in the lower animals which one observes daily in a human being in the wards of a large general hospital. This is in harmony with the recent observations among the wounded on the battlefields of Europe. Infected wounds heal more rapidly under the influence of autogenous vaccines or serums, whether prepared scientifically or obtained by sucking the wound or chewing pus soaked bandages.

Furthermore, the treatment of all degrees of burns by the open air method is practically the uniform procedure in the hands of every experienced surgeon. By this method there is a rapid desiccation of the sloughing tissues and a drying up of the foul discharges. The absorption of toxic materials into the general cir-

culation is very much diminished. The invading organisms which always infect the burned surfaces are markedly attenuated. The granulations are left free to grow and cover over the denuded area without being torn off daily with the dressings by entanglement of the protoplasmic elongations in the meshes of the gauze. Furthermore, the tissues are not macerated by the continuous local pus bath.

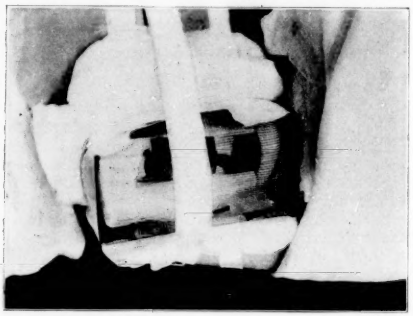

Fig. 1.—Infected appendectomy wound.

Rollièr has produced remarkable results in the treatment of surgical tuberculous affections which have gone to the worst stage by placing these patients with their lesions exposed to the air and sun. Most of these cases, naturally, were secondarily infected with pus organisms.

These results in the treatment of burns and surgical tuberculosis led me to undertake the treatment of old suppurating wounds by the open air method. This has been done now in several cases in Cook County Hospital with the most gratifying results. The patient is put to bed, if the affected area be on the lower extremity, as so frequently occurs in the form of foul varicose ulcers, a cradle is placed over the limb and thrown across this is a piece of mosquito netting to prevent contamination by flies or bits of dried tissue flying in the air. In some of these cases I have endeavored to hasten the healing process by playing the current of air from a small electric fan directly on the denuded surface for a period varying from fifteen minutes to half an hour four or five times daily. The rapidity with which the discharge diminishes and the odor disappears is nothing short of wonderful. The tissues on the old ulcer become rapidly dehydrated and in many cases become mummified, taking on the appearance and consistency of the bark of a tree.

At first the patients resent the fact that no dressings are put on the infected area, and complain that nothing is being done for them. After the lapse of two or three days, however, when they can see for themselves the rapid improvement which is going on, and can note the absence of the foul odor and the diminution in the discharge of pus, they express themselves as delighted at not having to undergo the painful dressings and the discomfort caused by pus soaked bandages.

In the process of desiccation, frequently large crusts or placques of inspissated serum, pus and epithelial and connective tissue elements are shed, leaving a clean and granulating surface which is devoid of pus. The surrounding tissues partake of the general improvement; the swelling and edema subside coincidently with the desiccation of the suppurating area.

Furthermore, this plan of treatment has the advantage of marked economy from the standpoint of dressings. The only attention which the wound requires on the part of the attending surgeon or intern is the occasional raising of crusts to allow the escape of pus or serum, or perhaps the occasional irrigation for a short time of some stubborn area. No dressings whatever are used. In some of our cases we have used, as in the treatment of burns, an inert desiccating powder which forms a cement-like substance with the desiccated tissues and serum.

The laity insist that bandages be put on wounds, and will naturally feel that the attending surgeon fails in fulfilling his whole duty unless he can make the patient who is suffering from a profuse, foul-smelling discharge acceptable in society. In other words, the treatment of these conditions is to be carried on in private. Under present day conditions it would, of course, be impossible for a patient with a putrefactive odor to expose a sloughing wound in public. Therefore, this treatment must always be confined to hospital or to home practice and no doubt this will in many cases prevent its use.

In ambulatory cases the wounds were protected by sterilized wire screening appropriately bent and the sharp points of the wire covered by strips of adhesive plaster.

The following histories are from the patients treated by me in Ward 10 in the Cook County Hospital:

REPORT OF CASES

Case 1.—Man, aged 51, a laborer, was admitted to the Cook County Hospital, March 8, 1915. Six years previously

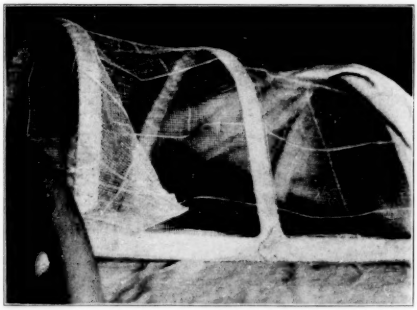

Fig. 2.—Infected wound of foot.

he was struck on the anterior surface of the right leg, receiving a wound which never healed, but slowly increased in size. He was able to continue working until six months prior to admission, when the ulcerated area was about as large as one's hand. At this time it began to increase more rapidly, and in spite of treatment the condition became constantly worse.

Past History.—Has had varicose veins of the right leg for ten years; has had rheumatism for seven or eight years. Denies syphilis; admits Neisserian infection seventeen years ago.

This man was put to bed and the treatment previously described given. Within five days, practically the whole ulcerated area had crusted over. The foul odor had entirely disappeared, as had also the edema and swelling. The crusts practically covered the entire denuded area and the patient was free from pain.

CASE 2.—A laborer, male, was admitted to the County Hospital in November, 1914. He had had varicose ulcers of the left leg for three years. The patient was put to bed and the open air treatment instituted. Within two weeks the ulcerated area had almost healed and the patient left the hospital.

CASE 3.—Man, a cook by occupation, was admitted to the County Hospital in September, 1914. He had varicose veins of both legs and a large, foul ulcer on the left leg. Open air treatment was immediately instituted, with the result that the ulcer healed within three weeks and the patient left the hospital apparently cured.

CONCLUSIONS

1. The advance made in the treatment of old suppurative wounds has not been in keeping with the advances made in other departments of surgery.
2. The treatment of suppurating areas by voluminous dressings, either sterile or antiseptic, macerates and devitalizes the tissues, fosters the development of the pathogenic flora and does not assist in the repair of the tissue.
3. It is always of advantage, when possible, to convert a moist into a dry type of gangrene. Therefore, the desiccating influence on the wound of the atmospheric air, in the absence of moist coverings of any sort, tends to attenuate infecting organisms.
4. The method is safe, economical and is in keeping with nature's own processes as observed in the lower animals.
5. The patient's period of convalescence is shortened and he absolutely suffers no pain.
6. In my experience, both in the treatment of wounds and of burns, the danger of contamination from the atmospheric air is negligible.
7. The addition of plenty of sunshine would be a valuable asset, but is not readily obtainable.

Coal Mine Fatalities in 1914.—According to a bulletin of the Bureau of Mines in 1914 there were 2,451 fatalities in the coal mines of the United States as compared with 2,785 in 1913, a decrease of 334. The principal decreases were in fatalities from coal dust explosions, 96 per cent., haulage 11 per cent. and falls of roof and pillar coal 10.6 per cent. The net decrease in underground fatalities was 365, or 14 per cent., a saving of one life for each day of the year. There were 331 fatalities from gas explosions, an increase of 240 over 1913. There were slight increases in fatalities from explosives, electricity and shaft accidents, but a net decrease for both underground and surface accidents of 12 per cent. The estimated total number of employees for the year was 742,868 as compared with 747,644 in 1913. The fatality rate was therefore 3.30 per thousand men employed in 1914 as against 3.73 in 1913. The amount of coal produced in 1914 is estimated to be 10.5 per cent. less than in 1913, but the fatality rate per one million tons of coal was 4.89 in 1913 and 4.81 in 1914. Improvement was due to many causes, not the least of which was said to be the cooperation of all concerned.

HYPERTROPHIES OF THE ENDOMETRIUM *

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In the study of the pathologic conditions of the endometrium which are not the results of infection, several are encountered that may be confused with each other or with the normal endometrium or with adenocarcinoma of the body of the uterus. The premenstrual endometrium is the normal form most frequently mistaken for some pathologic state; but occasionally a hypertrophic endometrium with narrow contracted glands, unless care is exercised, may be mistaken for a normal postmenstrual type. Among these noninflammatory hypertrophies are those associated with extra-uterine pregnancy, with ovarian growths and a third group for which we have at present no adequate explanation and which may be divided into two groups, the glandular and the interstitial.

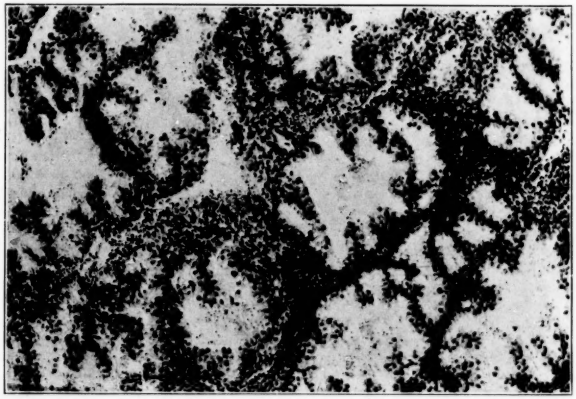

Fig. 1.—The endometrium of extra-uterine pregnancy. All the characteristics of the premenstrual type of endometrium are exaggerated.

On account of the frequent references that are made to endometritis and hypertrophy of the endometrium associated with uterine fibroids and retrodisplacements, I have included in this paper the results of my investigation of the endometrium as it is found in association with these two lesions.

Nonmalignant overgrowths of the endometrium are comparatively common. In some instances the whole endometrium is thickened; in others there are found pedunculated masses of greater or less extent. They occur most frequently between the ages of 40 and 50, but are also found at periods of life both earlier and later than this.

The symptom that attracts the attention of the patient is hemorrhage. This hemorrhage is a persistent but not a profuse flow in most cases, resembling in quantity a rather free menstrual period and continuing for weeks or months. In this it is not unlike

* Read at the Annual Meeting of the Medical and Chirurgical Faculty of Maryland, April 28, 1915.

the bleeding due to adenocarcinoma of the body of the uterus, and since the age incidence is the same, it is very important that we should have some definite means of distinguishing between them. The only reliable method is by the proper interpretation of microscopic examinations of uterine scrapings.

EXTRA-UTERINE PREGNANCY

Figure 1 is the type found in extra-uterine pregnancy. Here we have every characteristic of the premenstrual endometrium magnified. The stroma cells are large and in appearance approach the decidual cells. The glands are very much dilated and very irregular in outline. The epithelium lining the glands is swollen and projects into the caliber of the glands, producing an exaggerated saw-toothed appearance.

This specimen was curetted from a woman of 24 who had bled excessively at each of the four last menstrual periods. The last flow ceased June 16, and she was curetted on the 28th, twelve days after the flow stopped. Under ordinary conditions one would expect to find an endometrium of the intermenstrual type. The history did not indicate an extra-uterine pregnancy, but the microscopic examination of an enlarged tube removed after curettement showed chorionic villi.

What appears to happen in extra-uterine pregnancy is the continuation of the same action on the endometrium that produces the premenstrual type; the continued action causing an exaggeration of the ordinary type. There is little doubt that these changes are due to the internal secretion of the ovary.

Fig. 2.—Ovarian type. Found when the uterine bleeding is due to an ovarian lesion. Glands dilated; stroma apparently diminished.

OVARIAN TYPE

Figure 2 is a type which has been found quite constantly in women who had been bleeding and where some marked ovarian lesion was present. This particular section was made from the scrapings of a young woman of 23 who had been bleeding constantly for several weeks. In one ovary there was a graafian follicle cyst and in the other a small multilocular cyst.

The section shows numerous dilated glands occupying the whole depth of the endometrium. Their outlines are fairly regular. In the lumen of the glands are some blood and much broken down epithelium. The epithelium lining the glands is in a single layer and somewhat enlarged, but does not buckle out into the caliber of the glands. The stroma cells are normal in size, but apparently decreased in number; that is, the volume of tissue between the glands is relatively small, and this makes the impression that there has been an actual atrophy of the stroma cells. In reality the increase in depth of the endometrium due to the dilatation of the glands distributes the stroma over a greater area than normal, and this gives the appearance of decrease in quantity. Both the epithelial cells and the stroma cells are deficient in chromatin. There is a slight increase in the small round cells.

The endometrium of this type resembles somewhat the normal premenstrual type, but is easily distinguished from it on superficial examination by the greater regularity of the outline of the glands and the apparent thinning out of the stroma. A closer examination shows that while the glands are dilated, the epithelial cells lining them are smaller and more regularly distributed than in the premenstrual type, and that the decrease in the stroma is only apparent and not actual.

GLANDULAR HYPERTROPHY

The true adenoma is shown in Figure 3. This illustration was taken from a case in which the growth projected through the cervix. The patient was 57 years of age and had been bleeding almost constantly for seven years.

This growth is characterized by the great increase in the number of glands associated with a moderate increase in the stroma. The glands are lined by a single layer of epithelial cells which have very large nuclei that contain much chromatin.

The uterine adenoma is very closely related to adenocarcinoma of the body of the uterus, and may be confused with it. The essential points of difference are that the epithelial cells in the glands of an adenoma are uniform throughout the growth, and present the same general appearance as in the normal uterine glands. And while the glands of a given specimen may vary some in caliber, the general appearance of all is the same. On the other hand, the epithelial cells lining the gland spaces of an adenocarcinoma are very irregular both in size and in chromatin content. Also the epithelium tends to pile up within the glands and later to break through into the stroma. No two of the gland spaces in an adenocarcinoma present the same kind of outline.

INTERSTITIAL HYPERTROPHY

Interstitial hypertrophy of the endometrium (Fig. 4) much more commonly involves the whole endometrium than does the glandular form. It is charac-

terized by a great increase in the stroma and by very little if any increase in the number of glands. The glands may be so narrow as to resemble those of the postmenstrual endometrium, or they may be much dilated. What is most common is to find narrow

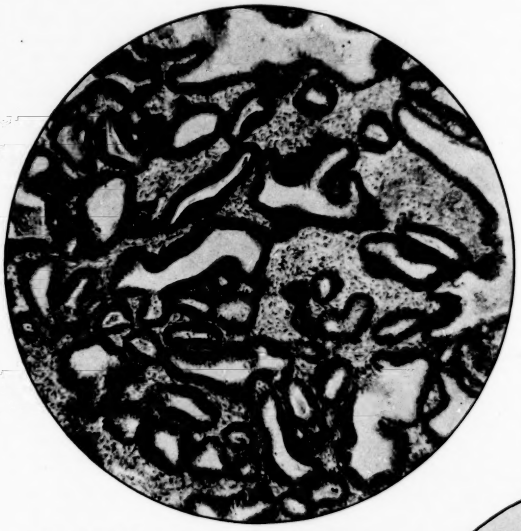

Fig. 3.—Glandular hypertrophy: adenoma. Great increase in the number of glands; epithelium of the glands regularly distributed.

and dilated glands irregularly distributed throughout the entire thickness of the endometrium. Without reference to the caliber of the glands, the epithelium lining them resembles that in the postmenstrual endometrium and retains its regularity of distribution. There is an entire absence of the saw-tooth appearance of the postmenstrual endometrium, as well as the piled up, irregular epithelium, that is so characteristic of adenocarcinoma.

This type of hypertrophy of the endometrium is not infrequently associated with marked hypertrophy of the uterine walls. In some instances the thickening of the uterine walls may be so great that on bimanual examination one may think that the enlargement is due to a submucous or interstitial fibroid; but on section the walls will be seen to be uniformly thickened, and the microscope shows that they are made up of normal cells.

THE ENDOMETRIUM WITH RETRODISPLACEMENT

The general appearance of the endometrium in retrodisplacement varies with the period of the menstrual cycle, but shows an almost constant increase above the normal of small round cells. The increase is in the scattered round cells and not in the defined groups. Of the endometriums examined, 50 per cent. were of the interval type and the other half were about equally divided between the premenstrual and postmenstrual types. Fifty per cent. of all slides showed marked congestion. In a few instances there was an increase of spindle cells. It is probable that these cells were the result of an old infection, but it was not always possible to decide this point.

The changes found in the endometrium of the retrodisplaced uterus are apparently the result of interference with circulation, due to the position of the uterus, and not caused by any active process. Before this was recognized, we followed the dictum that practically every retrodisplaced uterus had an infected endometrium which demanded curettage. Realizing several years ago the incorrectness of this teaching, we now curet very few patients on whom it is necessary to operate for retrodisplacements but rely on the correctness of the position of the uterus to relieve the symptoms of leukorrhea and menorrhagia due to the passive congestion of the endometrium.

THE ENDOMETRIUM WITH FIBROIDS

The endometrium associated with uterine fibroids acquires no characteristic appearance. All types are seen and none of them bear any direct relation to uterine hemorrhage. For example, of three cases in which the endometrium was of the senile type, one patient was menstruating normally each month, one was bleeding frequently and profusely, and one had lost no blood for five months. The variation in type is just what would

Fig. 4.—Interstitial hypertrophy. Stroma much increased in quantity; glands irregular in caliber and lined by low columnar epithelium.

be expected when we bear in mind that the hemorrhage caused by fibroids is due to a growth in the uterine wall and the consequent local disturbance of the circulation, and has no relation to the changes in the endometrium which result from ovarian influence.

6 West Preston Street.

PSEUDOMUCINOUS CYST OF THE APPENDIX

ITS RELATION TO PSEUDOMYXOMA PERITONEI *

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Among the rarer lesions of the vermiform appendix, pseudomucinous cyst is of particular interest because of its peculiar pathologic nature, its mode of development, and the complications to which it sometimes gives rise. It results from the slow accumulation of an altered secretion of the appendix produced by a mild inflammatory process, and usually unaccompanied by subjective symptoms. There is a direct relation between the development of the disease and the normal involution of the appendix, as most of the cases have occurred between the ages of 35 and 50, or during the period in which retrogression with the obliteration of the appendix lumen takes place.

Very little was known about the normal secretion of the appendix before the recent experimental work of Heile,[1] which showed it to be of the same nature as the secretion of the cecum. It possesses both tryptic and amyloptic ferments which were demonstrated not only in the appendix secretion but also endocellularly in the mucosa of the organ. An internal secretion of hormones was also extracted from the wall of the human appendix which possessed the power of stimulating peristalsis of the intestines when injected into rabbits.

During an acute attack of appendicitis, the fluid which accumulates is an exudate varying in nature from serous to purulent or ichorous. The accumulation either disappears rapidly with the subsidence of the acute inflammation, or escapes into the surrounding peritoneal cavity through a perforation. Persistence of this type of fluid with chronic cyst formation is rare. However, cases are reported of stenosis of the proximal portion with pus accumulation in the part beyond leading to the formation of chronic empyema of the appendix, which never reaches a very great size, and possesses a much thickened wall similar to an empyema of the gallbladder. Chronic hydrops following milder attacks in which the appendix is filled with a simple serous exudate is also very rare, because the mucous membrane is preserved in such cases, and its secretion changes the character of the contents so that pseudomucinous cysts are nearly always the result.

There is much uncertainty as to the cause of the stenosis and retention of secretion. Normal involution of the appendix begins any time between the ages of 18 and 40, and on an average by the 39th year the mucous membrane and lymphatic tissue have disappeared at the expense of an increased submucous fibrous tissue, and the lumen of the appendix is obliterated. According to Sprengel, this obliteration of the lumen nearly always begins at the distal portion and progresses slowly toward the base. Faber examined longitudinal sections of appendixes undergoing involution, and reports that there are always signs of active inflammation with granulation tissue in the mucosa and submucosa about the point of obliteration. Sprengel also believes that involution of the appendix is usually accompanied by an inflammatory process; on the other hand, Ribbert and his followers assert that it is unaccompanied by inflammation. Possibly in some cases this process may begin at the proximal end of the appendix and thereby lead to retention and distention of the distal portion. Acute inflammation may destroy a part or all of the mucosa and lead to rapid obliteration of the lumen. It is probable that inflammation and involution are associated in varying degrees in the causation of the condition.

In many cases there is no history of preceding attacks of appendicitis, and in those with previous disturbance the attacks have been mild. Usually the lumen of the appendix is obliterated at the seat of constriction, but in some instances it is patent so that some of the gelatinous secretion may escape into the cecum. The amount of the appendix involved is variable. Usually it is almost the entire extent of the organ, the constriction being located close to the cecum; but it may be located anywhere along its course with dilatation of the part beyond. Rarely the lumen of both proximal and distal portions is obliterated and the middle portion dilated. In other instances the appendix remains little or undilated while one or more diverticula form along its course, which may reach considerable dimensions, as in the specimen reported by Dr. Herb,[2] now in the museum of Rush Medical College, in which the diverticulum measured 7 cm. in diameter. The changes in the wall of the dilated portion are variable. When moderately distended there is very little variation from the normal, except that the folds of the mucosa are obliterated. When the dilatation is more extensive, the wall becomes very thin and transparent in places, while in others there may be fibrous thickenings in the serosa. The mucous membrane is very much thinned and in places disappears. Along its surface may be seen secreting and broken down cells which appear to be giving rise to the peculiar contents of the lumen. The muscle fibers gradually atrophy and eventually are replaced by fibrous tissue. In very large specimens the wall consists of fibrous tissue which may be largely devoid of a mucous lining. The lumen is filled with a transparent gelatinous material which in some instances is thin, but usually is quite thick and escapes from the incised appendix either very slowly or not at all. It contains no feces, and in most instances in which bacteriologic examinations have been made, they have been negative. Chemically, the material gives the tests for pseudomucin. When acidulated with mineral acid and heated, a substance is precipitated which reduces copper salts; but no precipitation occurs on heating with acetic acid. Formerly some of these cases were mistaken for colloid carcinoma of the appendix, but histologic examination fails to reveal the presence of a tumor.

Clinically, the condition is remarkably free from symptoms It usually develops slowly without pain, but rarely following a mild attack of appendicitis. Occasionally there is a dull ache or light colicky pains in the appendix region. Sometimes the patient's atten-

* From the Surgical Clinic of Rush Medical College.

1. Heile: Beitr. z. klin. Chir., 1914, xciii, 520.

2. Herb: Tr. Chicago Path. Soc., 1907.

tion is first attracted by the appearance of a mass in the right lower quadrant of the abdomen which on examination is smooth, oval or spherical, movable, and may extend beneath the brim of the pelvis. The condition is illustrated by the following case from the service of Dr. D. D. Lewis at the Presbyterian Hospital, to whom I am indebted for the privilege of making this report:

V. N., woman, aged 36, married, with no history of previous abdominal disturbance, for a year had noticed a lump in the right lower quadrant of the abdomen which had gradually increased in size. It gave her no trouble until three months before, since which time there had been a dull ache in the region, but never any acute attacks of pain. Examination showed a visible and palpable elongated mass in the right lower quadrant, parallel to, and just above Poupart's ligament. It was movable and slightly tender and could be felt on vaginal examination. Under the diagnosis of an ovarian cyst, a median abdominal incision was made and a cystic tumor delivered from the right side of the pelvis. Its only attachment was found to be at the base of the cecum, and a mesenteriolum was present which served to identify it as a cyst of the appendix. The pedicle was clamped, the appendix cut away and the stump invaginated. The abdominal cavity was otherwise normal, there being no signs of peritoneal involvement.

The tumor (shown in the accompanying illustration) is a sausage-shaped mass 17 cm. long and 21 cm. in its greatest circumference. It is slightly curved along the border of the mesenteriolum, which extends about half its length. Blood vessels from the mesentery run out into the wall on either side and toward the tip. The surface of the appendix in most of its extent is smooth, but toward the end and in several places along its course there are slight bulgings of the wall, which in these regions is very thin and transparent. Between these slightly herniated portions, and particularly opposite the mesentery, there is considerable fibrous thickening of the wall, and some of the dense, opaque areas suggest calcified plaques. The appendix is filled with a thick, clear, gelatinous material which escapes very slowly from the excised windows of the hardened specimen. On chemical examination it proved to be pseudomucin, as it is not precipitated by the addition of acetic acid and does not coagulate on boiling but acquires a milky hue. Alcohol produces a coarse, thready precipitate. The appendix at the neck of the cyst is of normal size and structure except for some fibrous thickening of the serosa. The lumen is patent.

Appendix, with base ligated.

Microscopically the wall consists of fibrous tissue lined by an incomplete smooth mucous membrane, the regions where the wall protrudes being entirely devoid of a mucous covering. The cells of this layer are variable, the superficial ones being irregular and filled with mucus, which they seem to be liberating in the lumen by disintegration. In numerous places, but particularly where the wall is thickest, there is calcification of the submucous portion. All traces of muscularis have disappeared. This is one of the largest specimens thus far reported.

An attempt was made to produce the condition experimentally in dogs by obliterating the lumen of the proximal portion of the appendix. Seven animals were operated on in the following manner:

After removal of the contents of the appendix by stripping out, a longitudinal incision was made through the wall at its base, the mucosa dissected up and divided transversely, and each end closed with a purse-string suture. The incision in the muscularis and serosa was then closed, leaving the lumen obliterated for a distance of about 1 cm. In none of the cases were the blood vessels in the meso-appendix interfered with. Six of the animals died in from four to seven days, and at necropsy each showed a gangrenous appendix distended with an ichorous exudate similar to the gangrenous portion frequently seen beyond a fecal stone in human appendicitis. In four instances an extensive local and in two a general peritonitis was found.

One dog survived and was killed at the end of two months. At necropsy it was found that the operation had been unsuccessful, as a narrow lumen had reformed through the obliterated portion, and the appendix secretions escaped into the cecum without producing any dilatation.

Evidently the obstruction is produced too suddenly and accompanied by a too severe and extensive traumatism to bring about the condition of retention cyst formation, as gangrenous infection resulted in every case in which the lumen was successfully closed.

Complications of the disease are of interest. Rarely an acute inflammation of the cyst develops which may necessitate immediate surgical interference. A striking condition known as pseudomyxoma peritonei results from rupture of the cyst, with the escape of its contents into the peritoneum. This condition was first described by the gynecologist Werth as coming from the rupture of a colloid cystoma of the ovary; but subsequent observations showed that it may come from other organs, as the gallbladder and intestinal diverticula. Frankel, in 1901, described the first case arising from a perforated colloid cyst of the appendix. Since then about twenty cases arising from the appendix have been reported.

Perforation occurs usually without any accompanying symptoms, and the pseudomucinous material becomes disseminated over the peritoneal surface in various-sized masses. These may be confined to the vicinity of the appendix, but usually they are found in the pelvis and over the peritoneum of the lower part of the abdomen. The peritoneum may be irritated and throw out an investing fibrous sheath by which the particles become attached to it. The colloid material probably never contains living epithelial cells (as when derived from the ovaries) which proliferate and continue their secretion. The opening in the appendix usually persists so that there is a more or less constant escape of material into the abdominal cavity. In a few instances it has been found closed at operation or necropsy. These patients usually have little or no symptoms, as the contents are sterile. Loth recently reported a case in which rupture was accompanied by acute abdominal symptoms, and slight temperature and pain continued irregularly for four months, when the appendix was removed. Removal of the cystic appendix results in a cure, as the source of the material is removed and the remaining portion is silently absorbed. This peculiar complication was illustrated by a case in which Roberg[3] operated in 1907, the specimen of which is in the museum of Rush Medical College.

3. Roberg, O. T.: Tr. Chicago Path. Soc., 1908, p. 180.

The patient was a woman aged 46. She came for advice because of a left inguinal hernia, the presence of a palpable tumor in the right lower quadrant not having been noted. At operation the peritoneum was studded everywhere with gelatinous masses, large numbers of which were removed from the hernial sac and from the culdesac of Douglas. The cystic appendix, which measured 13 cm. in length, was filled with a pseudomucinous material, and a small perforation existed through which the gelatinous contents escaped into the peritoneal cavity. The condition was at the time thought to be colloid carcinoma of the appendix, but following the operation all symptoms disappeared and one year ago the patient was living and well.

122 South Michigan Avenue.

THE EXTERMINATION OF THE MOSQUITO

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Those who undertake for the first time the work of mosquito extermination are confronted with various theories concerning the means by which this important protective measure may be successfully carried out, which are often perplexing. It is quite necessary that these theories should be promptly dealt with, in order that methods which have no practical value may be eliminated from the plan of procedure.

Included among these theories is the widespread belief that birds, fishes, bats, aquatic fowls, etc., render valuable aid in the extermination of the mosquito. Some years ago, it was seriously recommended that certain birds be propagated for this purpose, and more recently this has been suggested in connection with bats. The truth is that the number of mosquitoes devoured by birds and bats has no practical effect in diminishing the danger and annoyance caused by this insect. It is the presence of mosquitoes rather than the number involved which calls for action.

An attempt to propagate birds or bats for the purpose of exterminating the mosquito would be not only a foolish but also an unscientific procedure, and would end in disappointment. It may be pertinently asked, Who would attend to the propagation, care and distribution of these creatures in connection with this work, and what reason is there to believe that they would remain in sections where they are most needed? For neither one is dependent on the mosquito for sustenance. Besides, an enterprise such as this, assuming it could be reasonably carried out, would sooner or later cause a plague of birds and bats, and become an intolerable nuisance, particularly in the case of the latter, for there is no more unwelcome or repulsive visitor than the bat. Furthermore, the money spent in carrying out such an impracticable measure would go far toward defraying the expenses of destroying the breeding places of the mosquito.

This theory is about on a par with the belief that buzzards render valuable aid in cleaning streets and in the removal of garbage and other filth. To my personal knowledge, these birds were to a certain extent depended on for this purpose in Vera Cruz not many years ago, and until this medieval practice was abandoned, and modern sanitary measures enforced, Vera Cruz was the home of yellow fever.

The danger of these various impracticable theories concerning the extermination of the mosquito lies chiefly in the fact that they distract the attention of the public from the real means by which this work may be successfully accomplished.

There is also a popular theory that fish and aquatic fowls render valuable aid in the extermination of the mosquito by the consumption of the larvae found in bodies of water where they abound, and it is advocated that small fish be propagated for this purpose.

In order to understand more intelligently the impracticability of this theory, it is necessary to know something of the habits of mosquitoes, their breeding places, etc. For this reason, it may be said that in the United States, these insects are divided into two classes: the inland mosquito, of which the *Stegomyia* or yellow fever mosquito, and the *Anopheles* or malarial mosquito are types; and the *Sollicitans* or Atlantic Coast mosquito, commonly known as "striped legged" or "salt water swamp" mosquito.

The inland mosquito is the one most commonly dealt with, for it may be found in almost every state of the Union; whereas, the striped legged mosquito breeds on the salt marshes along the Atlantic Coast.

Some important and interesting facts have been obtained in recent years pertaining to the habits of these two groups of mosquitoes. In connection with my own work on Staten Island, conclusive evidence was presented, as a result of a careful and extended investigation, that a distinct line of demarcation exists between the breeding places of the inland and coast mosquito; that is, they do not, as it was formerly supposed, occur in the same places; for the striped legged breeds only on the salt marshes along the coast, while the inland mosquito never breeds in these localities, but in the interior. These results are in full accord with the experiences of the late Dr. John B. Smith, state entomologist of New Jersey, than whom no one has more carefully and exhaustively studied the habits of these insects, or has contributed more to their extermination.

This knowledge renders the work of mosquito extermination far easier; particularly along the Atlantic Coast; for if the striped legged mosquitoes are present, it may be depended on that their breeding places are not in the interior, but must be sought for in the salt water swamps. Yet this variety is often found inland, probably of its own volition; and in this way differs from the inland mosquito, which most likely prefers to remain close to its breeding place.

I suspect that the apparent migratory habit of the striped legged mosquitoes is due to the fact that they get beyond the confines of their breeding place and cannot find their way back, and continue their flight to obtain the food most suitable to them, which is probably the vegetation found in the salt water swamps. If this nourishment were obtainable everywhere I question whether they would go further from their homes than the inland variety. The fact that the striped legged mosquitoes have been found a number of miles at sea is satisfactorily accounted for by adverse winds.

Those who are not familiar with the vast area of swamp land along the Atlantic Coast can form no satisfactory idea of the enormous breeding places which these great stretches of land afford. The ground is always water soaked and spongy from the incoming tide, and surface water cannot escape by absorption. These swamps are sometimes traversed by natural

ditches or creeks frequently containing very small fish, which regard as a choice morsel the larvae which find their way to these streams; but the number destroyed in this way is so infinitesimally small compared with the great and inexhaustible supply produced on these extensive breeding places, often miles in extent, that it offers no practical value in the extermination of mosquitoes of this variety; nor for various reasons would the propagation of small fish in these places, even if it could be reasonably carried out, make any practical difference in the result.

The inland mosquito will breed in almost any receptacle which contains water, preferably that which is stagnant and polluted; for the latter is rich in organic matter, and the larvae are voracious eaters. The fact that the inland mosquito breeds in unsuspected places, frequently not detected, is one reason why crusades against this insect are often unsuccessful.

Contrary to the general belief, mosquitoes, as a rule, do not breed in large bodies of water, but prefer small pools, where there is an abundance of vegetation and nourishment, and where they may be quiet. Mosquitoes are essentially vegetarians, notwithstanding the fact that the females, the only ones which bite, subsist largely on blood.

It is true that there are immense fresh water swamps found inland, particularly in the southern part of the United States, and these are most prolific breeding places; still these swamps, to a great extent, consist of comparatively small collections of surface water which are shallow and rich in vegetation. It may be added that while mosquitoes do not, as a rule, breed in large bodies of water, they lay their eggs along their borders, particularly if there is plenty of vegetation and the water is still.

While the *Anopheles* or malarial fever mosquito sometimes breeds in the same receptacle with other inland mosquitoes, the most common of which are the *Culex "pungens"* or *"pipiens,"* it is more often with its own kind. I have frequently found the anopheles' larvae in the open country in small collections of water covered with green scum, or having an abundance of vegetation and shade. These conditions are also found in the inland swamps already referred to.

The *Stegomyia,* or yellow fever mosquito, prefers to breed in built up communities, and in all sorts of receptacles which are favorable to insanitary conditions. During a visit to Havana some years ago, I was informed by a resident that he was unable to account for the presence of the *Stegomyia* in his house for a long time, but by continued and diligent search, found that the mosquitoes were breeding in small tin cans in which the legs of the refrigerator were placed as a protection against rats.

Mosquitoes have their likes and dislikes as to the selection of their breeding places. Just why they favor certain parts of the same section of the country for their propagation and avoid others is not fully known, but it is quite likely because of climatic conditions, or the character of breeding places and of the vegetation or nourishment which is available. That one place is more favorable than another cannot be doubted, for in some parts, mosquitoes appear regularly each year in great numbers, while in other localities, although these insects are annually present, they are few in number and do not constitute a great annoyance. The latter condition is often erroneously attributed to the presence of certain birds, etc.

A distinguished physician has stated that he was led to believe from personal observation that ducks are valuable agents in the extermination of the mosquito, and has suggested that in this way they might be of aid in the prevention of yellow fever and malaria.[1]

I am quite sure that the varied, innumerable and often unrecognized breeding places of the inland mosquito to which I have referred will quite clearly indicate that but little dependence can be placed on birds, fishes, fowls or animals, or anything else in the extermination of this insect, *except the destruction of its breeding place.*

The experimental stage in connection with the extermination of the mosquito has long since passed, and no doubt remains that this important work may be successfully accomplished, provided proper means are employed, and provided that the work is under the direction and control of federal, state or municipal authorities. The brilliant results obtained in Cuba, in Panama and on the Roman Campagna may be cited as conclusive proof that the inland mosquito may be exterminated; and the success of the work on Staten Island, where about ten square miles of salt water swamp land was drained and freed from breeding places, furnishes indisputable evidence that the striped legged mosquito may be dealt with in the same way.

The extermination of the mosquito can be accomplished only by the destruction of its breeding place. If birds, bats, fishes and fowls are of some aid in this direction, so much the better; but no dependence should be placed on these creatures in the work of elimination.

There is but one way by which the breeding place of the striped legged mosquito can be successfully destroyed, and that is by the proper draining of the swampland where these insects propagate.

The extermination of the inland mosquito requires a different procedure, for in this instance, small and innumerable receptacles of every description are to be dealt with, and these must be detected and destroyed. This will require the greatest amount of patience, but the reward will compensate for the time and trouble expended.

Furthermore, this work must be uniformly carried out in the entire infested section; for if the breeding places are destroyed only here and there, and adjoining ones are left untouched, successful results cannot be obtained, for there will be sufficient breeding places left to supply mosquitoes for all purposes. It is to secure uniformity of action in this direction that makes it so necessary that the work of mosquito extermination should be under some form of official control.

A word may be said regarding the use of petroleum oil. This agent should be employed only for temporary purposes, and must not be accepted as a substitute for the permanent destruction of breeding places. Semirefined and not the crude oil should be used, for the latter does not spread over the surface of the water, and the refined is rather too thin and is more expensive. Petroleum does not poison the larvae, but destroys them in a mechanical way; for when it is spread over the surface of the water as a film, it plugs up the minute openings of the respiratory tract of the larvae when they come to the surface for air, which is necessary every minute or so. The oil is afterward disposed of in various ways, and the receptacles after some days become breeding places again.

1. Dixon, S. G.: The Duck as a Preventive Against Malaria and Yellow Fever, THE JOURNAL A. M. A., Oct. 3, 1914, p. 1203.

There is no agent which may be used as a substitute for petroleum oil, for it acts quickly and is cheap and not dangerous. The latter is an important consideration, for if poisonous solutions are used, for instance in pools in the country where animals have access, unpleasant results are apt to follow. Besides larvae are hardy little bodies, and not easily affected by poisonous agents. My experiments in this direction showed that larvae will remain alive for over twenty-four hours in a 1:1,500 solution of mercuric chlorid, and a comparatively strong solution of phenol (carbolic acid) and other products which are often advocated for this purpose.

While petroleum oil is a valuable temporary agent in dealing with the inland mosquito, it is worthless in the destruction of the striped legged or coast mosquito, chiefly on account of the great area involved, and must not be considered in connection with this work.

I may add that after long personal experience in the extermination of both the inland and coast mosquitoes, I have yet to know of any method by which this work may be successfully carried out except the destruction of breeding places. Besides, this is in full accord with the modern methods of preserving health; for it is the prevention of mosquitoes rather than their treatment that is called for.

205 West Fifty-Seventh Street.

FULLER'S EARTH; ITS ADSORPTIVE POWER, AND ITS ANTIDOTAL VALUE FOR ALKALOIDS *

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INTRODUCTION

For several decades fuller's earth (Parsons[1]) has been used extensively for the removal of coloring matter from oils. It owes this use to its capacity for adsorbing basic colors from solutions, which resides in the finest particles of the clay. The union between the basic substance and the earth is believed to be physical, as it can be easily broken up by use of proper solvents.

In 1910, John Uri Lloyd[2] of Cincinnati discovered that the addition of fuller's earth to alkaloids greatly diminished or almost abolished their bitter taste and that most alkaloids could be quantitatively removed from solutions by means of it. Further research revealed that this activity resided in the finest particles of the earth, which Lloyd separated by elutriation from the coarser portion and to which the name "Lloyd's reagent" has been applied.

In view of the theoretic interest as well as of the practical possibilities inherent in this property of fuller's earth, this research was undertaken to determine, first, the relation of alkaloids to "Lloyd's reagent" and to various other specimens of fuller's earths; and, secondly, to see to what extent the action of various alkaloids may be modified by combination with these earths. Lloyd, Eli Lilly & Co., and various producers of fuller's earth have kindly supplied liberal quantities of material, by means of which the following data were obtained.

TABLE 1.—ADSORPTIVE VALUE AND ACIDITY OF VARIOUS SPECIMENS OF FULLER'S EARTH *

Specimen	Morphin Sulphate, 0.5% sol.	Quinin Bisulphate, 0.5% sol.	Malachite Green 1%, with 0.25% Morphin	For 100 Gm. Earth Phenolphthalein, c.c. of Tenth Normal Sodium Hydroxid	Congo-red
Colloidal portion of Lester Clay without drying.†	6.5	9	20	77	Purplish.
Lloyd's Reagent, Eli Lilly & Co.	8	10	30	155	Bluish purple.
General Reduction Co., Dry Branch, Ga.	20	30	60	175	Blue.
Olson Fuller's Earth, Benton, Ark.	26	44	70	20	Red with trace of blue.
Specimen F (source unknown)	28	50	75	215	Bluish purple.
Lester Clay Co. (xx F) Jacksonville, Fla.	36	50	100	25	Reddish purple.
Specimen D (source unknown)	52	74	105	30	Red with trace of blue.
Midway, Fla., Fuller's Earth	70	80	120	40	Bluish red.
Manatee (E x F) Ellenton, Fla.	80	104	115	15	Bluish red.
Atlantic Refining Co. (xxF) Ellenton, Fla.	110	140	130	5	Red with faint tr. of blue.
Specimen E (source unknown)	200	280	160	5	Red with faint tr. of blue.
Pear's Precipitated....	500	400	600	5	Red with faint tr. of blue.
Kaolin	600	600	1,000	0	Red.

* The figures in the first three columns indicate parts by weight of the respective earths required to remove from solution 1 part of the substance named at the head of the column. The figures in the fourth column indicate c.c. of tenth normal sodium hydroxid needed to neutralize 100 gm. of fuller's earth, phenolphthalein being used as indicator. The specimens are arranged in order of adsorptive power. Variations in adsorptive power of different specimens from the same source have been noted.

† Drying would reduce activity somewhat.

THE ALKALOID ADSORBING QUALITY OF VARIOUS SPECIMENS OF FULLER'S EARTH

This was studied by briefly shaking accurately measured quantities of alkaloidal solutions with varying amounts of fuller's earth, filtering and then testing the filtrate for the alkaloid to determine the smallest amount necessary to remove the alkaloid from the solution. The figures given in Tables 1 and 2 show how many parts of fuller's earth had to be used to remove 1 part of alkaloid from solution. There is some difficulty in deciding on the end-point in these determinations, owing to the fact that water dissociates the combination to a slight extent, so that it is almost impossible to get rid of traces of the alkaloids in the filtrate. Therefore the smallest amount of fuller's earth that would remove the alkaloid as thoroughly as a larger amount was the quantity looked for.

In Table 1, the various earths have been arranged in order of their adsorptive power. It must be understood that the figures given in this table are only of relative value. Slight modifications in the technic of the test give quite different results. Nevertheless, when the same technic was applied to each of the different specimens, their relative position in the table was well maintained. It must furthermore be realized that the adsorptive power of fuller's earth from various sources depends, to a certain extent, on the degree and uniformity of fineness of the specimen. Mere

* From the Pharmacologic Laboratory of the College of Medicine of the University of Illinois.

1. Parsons, Charles L.: Fuller's Earth, Bull. 71, Mineral Technology, Dept. of the Interior, Bureau of Mines, October, 1913.
2. Lloyd, John Uri: Lloyd's Reagent—Preliminary Announcement, Jour. Am. Pharm. Assn., May, 1914, iii, No. 5, p. 625.

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sifting raises the value, if a considerable amount of coarse particles be present; so does elutriation. Nevertheless there is a limit to which the adsorptivity of any one specimen may be raised by these means.

It will be noted that "Lloyd's reagent" is considerably more powerful than any one of the specimens of fuller's earth. It will also be seen that the specimens obtained from Ellenton, Fla., are quite deficient in this power. Pear's precipitated fuller's earth, a very fine white powder, is surprisingly inert. The activity of kaolin is practically nil. In view of the fact that the United States Dispensatory as well as the National Dispensatory quote "fuller's earth" as one of the synonyms of kaolin, it seems of importance to point out that there is a marked difference in the adsorptive power of these substances.

Kaolin as well as fuller's earth is considered to be essentially composed of hydrous aluminum silicate; the latter being merely less pure than the former. That this is the case can be readily seen by comparing the composition of kaolin (Watts[3]) with that of fuller's earth (Vaughan[4]) and of Lloyd's reagent (Waldbott[5]).

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Alkalies	Water
Kaolin	45.40	37.34	1.92	0.44	0.20	0.52	14.0
Fuller's Earth..	57.26	18.33	1.87	2.58	1.06		18.4
Lloyd's Reagent	55.30	9.82	14.80	1.58			17.41

It is an interesting question, why such great difference in adsorptive power exists among these substances. The following theories present themselves: First, it might be due to a physical difference, namely, the amount of colloidal material present; secondly, it might be due to difference in reaction; thirdly, it might be due to difference in chemical composition.

THE AMOUNT OF COLLOID IN FULLER'S EARTH

Ashley[6] believes that the power of adsorbing certain dyes by clay supplies a measure of the amount of colloid present. He selected malachite green as the best dye known for this purpose, as it is wholly non-colloidal. Colloidal dyes, even if as feebly colloidal as methylene blue, introduce complicating factors that vitiate results, as may be seen by comparing the figures for malachite green with those arrived at with methylene blue: of Specimen F 40 times the amount was required, of Specimen D 60 times, of Specimen E 50 times, of Midway, Fla., fuller's earth 60 times—figures that are very near together in spite of great difference in alkaloid adsorbing power of these various specimens. Ashley agitates the clay with the dye solution for an hour, by means of a small ball mill, permits the clay to settle over night, and determines the amount of malachite green adsorbed by comparison with dilutions of a standard solution of malachite green. He found that half an hour's settling gave results that were too erratic, in view of the slow sedimentation of some specimens of fuller's earth. It must be understood that colored colloidal material in suspension makes the solution appear darker, so that it would seem less color was adsorbed, leading to the judgment that the clay is less colloidal, when it would be actually more colloidal than another clay that settled readily. I believe I have hit on a much less troublesome, more rapid and probably as accurate method of estimating the adsorptive power of fuller's earth by means of malachite green. The addition of a small quantity of an alkaloid, for example, morphin, to a fuller's earth suspension produces immediate deflocculation. On the other hand morphin does not readily salt out the malachite green. I therefore used in the determination of the malachite green figures (Tables 1 and 2) a solution of the following composition:

Malachite green	1.0
Morphin sulphate	2.5
Distilled water to.....	1,000

Filter after prolonged agitation.

The amount of fuller's earth needed to remove a certain quantity of malachite green from this solution, expressed in multiples of that quantity, is represented by the figures in Table 1. It will be noted that these figures run quite closely parallel to the figures indicating alkaloid adsorptive power. Other electrolytes, for example, sodium chlorid, also produce deflocculation of suspended fuller's earth. However, considerably larger quantities of sodium chlorid are needed to produce this result promptly: quantities that are capable of salting out the malachite green, thus interfering with the test.

From Tables 1 and 2 it will be seen that the adsorption of malachite green runs parallel with the adsorption of alkaloids, and is therefore presumably due to the same cause. To use this adsorption as a measure of the amount of colloid present, as is proposed by Ashley, merely rests on the assumption that it is due to colloid. It does not prove that this is the case. Inasmuch as other colloids experimented with, such as colloidal aluminium hydroxid, colloidal ferric hydroxid, colloidal silicic acid, mastic emulsion, do not have the power of adsorbing alkaloids to nearly the same degree as active fuller's earth, it is reasonable to assume that we have here a case of specific adsorption; and that, while no doubt the colloidal state is necessary for this effect, it is not the essential cause of it.

THE "ACIDITY" OF FULLER'S EARTH

To determine whether the acid reaction generally displayed by fuller's earth is the cause of the effects observed, the degree of "acidity," or rather the power of the earth to adsorb bases, was determined for each specimen by titration of 2 gm. of the earth, suspended in 100 c.c. of distilled water, with tenth normal sodium hydroxid, using phenolphthalein as an indicator. A priori one might expect that the power of adsorbing alkali would be proportionate to, or at least run parallel with, the power of adsorbing alkaloids. This, however, is not the case, as can be seen by a glance at Table 1. Nevertheless, specimens devoid or practically devoid of acidity, like kaolin or Pear's precipitated fuller's earth, fail to adsorb alkaloids and those of lowest acidity are lowest in the list of alkaloidal adsorbents. Hence the presence of "acidity" is necessary to enable fuller's earth to adsorb alkaloids; though its degree is by no means a measure of the degree of this power. It therefore appears there are at least two factors involved in the adsorption phenomenon under consideration: the one the "acidity," the other the colloidal state. Whether the reason for the comparatively high adsorptive power of "Olson" and "Lester" fuller's earth, in spite of their rather low "acidity," is due to a relatively higher content of colloid than is present in more acid earths of lower activity, or whether there are two different "acidities" involved, one of importance in adsorption of alkaloids and the

3. Watts, A. S.: Mining and Treatment of Feldspar and Kaolin, Bull. 53, Dept. of the Interior, Bureau of Mines, 1913, p. 37.
4. Vaughan, T. W.: Fuller's Earth Deposits of Florida and Georgia, Bull. 213, Dept. of the Interior, U. S. Geo. Survey, 1902, p. 393.
5. Waldbott, Sigmund: Precipitation of Alkaloids by Lloyd's Reagent, Jour. Am. Chem. Soc., June, 1913, p. 837.
6. Ashley, Harrison Everett: The Colloidal Matter of Clay and Its Measurement, Bull. 388, U. S. Geol. Survey, 1909.

other not, remains to be settled. Nor have I the data at hand, at present, to discuss with any degree of profit the other theory previously advanced. On work on these questions I hope to report in the near future.

TABLE 2.—PROPORTION OF FULLER'S EARTHS NEEDED TO REMOVE 1 PART OF ALKALOIDAL SALT FROM SOLUTION

Alkaloidal Salt	Lloyd's Reagent	General Reduction Co.	Olson Fuller's Earth	Lester Fuller's Earth
Morphin sulphate	8	20	26	36
Quinin bisulphate	10	30	44	50
Nicotin hydrochlorid	20	50	100	110
Cocain hydrochlorid	20	75	95	150
Aconitin nitrate	50	70	100	120
Strychnin sulphate	40	110	130	200
Colchicin hydrochlorid	120	100	200	
Malachite green	30	65	70	100

The addition of Congo-red to fuller's earths enables one to determine roughly, but quickly, the presence and the degree of "acidity." It will be seen (Table 1) that all the earths that gave a blue or purple color with Congo-red were found active, while with the inactive kaolin there was no change; the others produced intermediate tints.

THE ADSORPTION OF VARIOUS ALKALOIDS BY FULLER'S EARTH

It will be seen from Table 2 that the various alkaloids differ in their relation to fuller's earth. For instance, a smaller quantity of an earth is needed to remove a morphin than a quinin salt; and less fuller's earth is needed to remove quinin bisulphate than strychnin sulphate. Colchicin needs the largest amount. As will presently be seen, these relations are significant in connection with the antidotal value of fuller's earth for these different alkaloids.

THE ACTIVITY OF ALKALOIDAL FULLER'S EARTH COMPOUNDS

The alkaloidal fuller's earth compounds resist dilute acid; but are decomposed by alkalies, even as dilute as fiftieth normal sodium carbonate, which is approximately the alkalinity of the intestinal juice. When fuller's earth compounds of various alkaloids are treated with fiftieth normal sodium carbonate solution and the solution is acidified, it yields precipitates with Mayer's reagent, apparently in proportion to the solubility of the free alkaloid in water: the nicotin precipitate is much more copious than that obtained with cocain; and the latter more abundant than the aconitin or the strychnin precipitate. Emetin yields only a trace. The concentration of the morphin solution obtained under these circumstances is below the threshold of distinct precipitation by Mayer's reagent, as is also a saturated solution of morphin in water; it yields, however, a copious precipitate with phosphomolybdic acid. Colchicin does not, of course, precipitate with Mayer's reagent, but does with tannic acid.

In view of this dissociability of the alkaloidal fuller's earth compounds by very dilute alkali, it is easy to understand why they become active in the animal body in spite of the fact, as Gordin and Kaplan[7] have shown, that the digestive ferments have no disrupting effect on these compounds. Being insoluble in acid liquids, even in the presence of pepsin, they pass through the stomach without acting on this viscus and without being acted on. On arriving in the intestine, they are gradually dissociated into their constituents, yielding the alkaloid to absorption. This explains why the general action of alkaloids, administered in this combination, is markedly delayed; and why a larger dose is needed to obtain the same effect.

This modification of the action of alkaloids is of toxicologic, of pharmacodynamic, and of therapeutic interest. The diminution of taste, for instance, obtained in this manner has made it possible to produce perfectly pleasant sweet tablets of strychnin (Fantus[8]) for administration to children. The absence of effect on the stomach might be of value in connection with some of the alkaloids. Though, in

TABLE 3.—EFFECT ON RABBITS OF SMALL FATAL DOSE OF STRYCHNIN SULPHATE, 5 MG. PER KILOGRAM GIVEN ORALLY, WITH AND WITHOUT FULLER'S EARTH AND ACID

Rabbit		Dose			Effect	
No.	Weight Gm.	Strych. Mg.	Fuller's Earth	Acid	Symptoms	Result
A 1	624	0.0031	0	0	Convulsions in 15 min.	Death in 35 min.
A 2	1,190	0.006	0	0	Convulsions in 20 min.	Death in 25 min.
A 3	800	0.004	0	0	Convulsions in 15 min.	Death in 18 min.
A 4	2,000	0.010	0	0	0	Recovery.
A 5	680	0.0034	0	0	Convulsions in 72 min.	Recovery.
A 6	680	0.0034	0	0	Convulsions in 47 min.	Recovery.
B 1	794	0.004	0.400	0	Convulsions in 47 min.	Death in 50 min.
C 1	1,021	0.005	1.500	1.500 tartaric	0	Recovery.
C 3	1,190	0.006	0.600	0.600 tartaric	0	Recovery.
C 4	794	0.008	0.800	0.800 tartaric	0	Death in 20 hrs.
C1 1	680	0.0034	1.020*	1.020 tartaric*	0	Recovery.
C1 2	737	0.0037	0.370*	0.370 tartaric*	Convulsions in 45 min.	Death in 49 min.
D 1	740	0.0037	1.110	2.220 NaH_2PO_4	0	Recovery.
D 2	680	0.0034	0.340	1.020 NaH_2PO_4	0	Recovery.
D 3	737	0.0037	0.370	0.740 NaH_2PO_4	0	Recovery.
D 4	624	0.0031	0.310	0.310 NaH_2PO_4	0	Recovery.
D 5	2,265	0.0115	1.150	1.150 NaH_2PO_4	0	Recovery.
D1 1	740	0.0037	1.110*	1.110 NaH_2PO_4*	0	Recovery.
D1 2	1,070	0.0054	1.600*	1.600 NaH_2PO_4*	0	Recovery.
D1 3	1,640	0.0082	1.640*	1.640 NaH_2PO_4*	0	Recovery.
D1 4	500	0.0025	0.750*	0.750 NaH_2PO_4*	0	Recovery.
D1 5	570	0.0028	0.840*	0.840 NaH_2PO_4*	0	Recovery.

* Five minutes later.

TABLE 4.—EFFECT ON RABBITS OF LARGE FATAL DOSE OF STRYCHNIN SULPHATE, 10 MG. PER KILOGRAM GIVEN ORALLY, WITH AND WITHOUT FULLER'S EARTH AND ACID

Rabbit		Dose			Effect	
No.	Weight Gm.	Strych. Mg.	Fuller's Earth	Acid	Symptoms	Result
A 1	2,250	0.0225	0	0	Convulsions in 17 min.	Death in 19 min.
B 1	2,500	0.025	7.50	0	?	Death in 23 hrs.
C 1	624	0.00624	1.25	1.25 tartaric	0	Recovery.
D 1	2,320	0.0232	2.32	2.32 NaH_2PO_4	0	Recovery.
D 2	570	0.0057	1.14	1.14 NaH_2PO_4	0	Recovery.
D1 1	1,870	0.0187	5.60*	5.60 NaH_2PO_4*	Convulsions in 15 min.	Death in 17 min.
D1 2	1,870	0.0187	5.60*	5.60 NaH_2PO_4*	Convulsions in 15 min.	Death in 17 min.

* Five minutes later.

7. Gordin and Kaplan: Jour. Am. Pharm. Assn., December, 1914, iii, 1656.

8. Fantus, Bernard: Tabellae Dulces, Sweet Tablets for Children's Medication, Jour. Am. Pharm. Assn., May, 1914, p. 656.

case of ipecac, the removal of the emetic action by means of fuller's earth also seems to destroy action on certain infusoria, as I have found in as yet unpublished experiments. The delayed absorption might increase the effect on the intestine and its contents; for example, the quinin combination might exhibit amebicidal action in the intestine. The delayed absorption of cocain may make the cocain combination of value as an antipruritic in weeping skin disease. Work on some of these questions is being carried on at present.

THE NAMING OF THE ALKALOIDAL FULLER'S EARTH COMPOUNDS

Inasmuch as some of these alkaloidal fuller's earth compounds are likely to prove of therapeutic value, it might be well to discuss the terms that have been applied to them. Lloyd named these "alcresta" alkaloids. It is under this title that Eli Lilly & Co. propose to place them on the market. The name is unfortunately not descriptive of the nature of the compound.

McGuigan[9] has applied the name "colloidal" strychnin to the strychnin compound with fuller's earth; a name I believe to be erroneous, as the moment the combination between the colloid and the alkaloid occurs, the colloidal state is destroyed and a coarse suspension results, as may be shown by the readiness with which morphin produces deflocculation of a fuller's earth sol or gel. It appears to me that the best name to apply to the strychnin compound would be "strychninated fuller's earth"; to the morphin compound "morphinated fuller's earth"; to the cocain compound "cocainated fuller's earth," etc.; terms analogous to "chlorinated lime" and "sulphurated potash."

9. McGuigan, Hugh: A Colloidal Compound of Strychnin and Its Pharmacology, THE JOURNAL A. M. A., Nov. 28, 1914, p. 1933.

Lloyd at first hoped that his reagent would prove a universal antidote for alkaloids and he describes it as one of the bitterest disappointments of his life when it was shown by Dr. Felter, in 1911, that the combination of Lloyd's reagent with strychnin was still capable of killing a dog in convulsions. Lloyd suggested to me that the addition of tartaric acid or of stearic acid to his reagent might raise its antidotal value. It will presently be seen that this is indeed the case with tartaric acid. Experiments with the stearic acid combination proved negative.

The experiments recorded below were undertaken primarily to study the toxic action of alkaloidated fuller's earth. It soon became apparent, however, that fuller's earth did possess antidotal value against certain alkaloids, while it had little value against others, as will be shown by the following data.

TABLE 5.—EFFECT ON DOGS OF FATAL DOSE OF STRYCHNIN SULPHATE, 2 MG. PER KILOGRAM, GIVEN ORALLY, WITH AND WITHOUT FULLER'S EARTH AND ACID

Dog No.	Dog Weight, Gm.	Previous Adm. of Morphin, 5 Mg. per Kg.	Dose: Strych. Sulph., 2 Mg. per Kg.	Dose: Accomp. (+) or Followed	Dose: Fuller's Earth	Dose: Acid	Effect: Symptoms	Effect: Result
A 1	8,500	0	0.017	.....	0	0	Convulsions in 12 minutes	Death in 26 minutes.
A 2	9,500	0	0.019	.....	0	0	Convulsions in 10 minutes	Death in 11 minutes.
A 3	7,000	0.035	0.014	.....	0	0	Convulsions in 100 minutes	Death in 135 minutes.
A 4	7,300	0.037	0.0146	.....	0	0	Convulsions in 25 minutes	Death in 40 minutes.
A 5	14,000	0.070	0.028	.....	0	0	?	Death in 24 hours.
A 6	8,150	0.040	0.014	.....	0	0	Convulsions in 7 hours....	Death in 20 hours.
B 1	8,000	0	0.016	+	4.80	0	Convulsions in 30 minutes lasting for 6:30 hours.	Recovery.
C 1	19,500	0	0.039	+	12.00	12.0 Tart.	Emesis + Conv. 0.....	Recovery.
C 2	9,000	0	0.018	+	5.4	5.4 Tart.	Emesis (?) Conv. 0.....	Recovery.
C 3	5,000	0	0.010	+	3.0	2.0 Tart.	Convulsions in 2:50 hours	Death in 2:45.
C 4	9,000	0	0.018	+	5.4	1.8 Tart.	Convulsions in 1:30 hours	Recovery.
C1 1	8,500	0	0.019	5 min. later	5.7	5.7 Tart.	Convulsions in 14 minutes	Recovery.
C1 2	12,500	0	0.025	5 min. later	7.5	7.5 Tart.	Emesis in 20 minutes.....	Recovery.
C1 3	6,500	0	0.013	5 min. later	3.9	3.9 Tart.	?	Death in 20 hours.
C1 4	16,000	0	0.032	5 min. later	9.6	9.6 Tart.	0	Recovery.
C1 5	7,500	0	0.015	10 min. later	4.5	4.5 Tart.	Convulsions in 10 minutes	Death in 20 minutes.
D 1	15,500	0	0.031	+	9.3	18.6 NaH_2PO_4	Emesis, slight.....	Recovery.
D 2	14,500	0	0.029	+	8.7	17.4 NaH_2PO_4	Defecation	Recovery.
D 3	12,000	0	0.024	+	7.2	14.4 NaH_2PO_4	Emesis	Recovery.
D 4	8,500	0	0.019	+	5.7	5.7 NaH_2PO_4	Convulsions in 78 minutes	Death in 130 minutes.
D1 1	7,000	0	0.014	5 min. later	4.2	8.4 NaH_2PO_4	Emesis, convulsions (?)....	Death in 20 hours.
D1 2	15,500	0	0.031	5 min. later	9.3	18.6 NaH_2PO_4	Convulsions in 4 hours....	Death in 20 hours.
D1 3	4,000	0.020	0.008	5 min. later	2.4	2.4 NaH_2PO_4	0	Recovery.
D1 4	8,500	0.043	0.017	10 min. later	5.1	5.1 NaH_2PO_4	Convulsions, slight	Recovery.
D1 5	6,350	0.0325	0.0127	10 min. later	3.8	3.8 NaH_2PO_4	0	Recovery.
D1 6	6,900	0.035	0.014	15 min. later	4.2	4.2 NaH_2PO_4	0	Recovery.
E 1	4,125	0	0.00825	+	2.475	5.0 Potas.Bitart.	Convulsions (?)	Death in 5 hours.

ANTIDOTAL VALUE IN STRYCHNIN POISONING

The antidotal value of fuller's earth in strychnin poisoning in the rabbit may be estimated from Tables 3 and 4. It will be seen in Table 3 that 5 mg. per kilogram is invariably convulsive and frequently fatal for small rabbits; that, on the other hand, a large rabbit (A 4) showed no effect from such a dose. Eliminating, therefore, the only other large rabbit in this series (D 5) from consideration, we find that fuller's earth alone is not antidotal to strychnin. The addition of tartaric acid or of sodium dihydrogen phosphate to the fuller's earth renders it, however, capable of preventing convulsions and of saving life in small rabbits, even if administered five minutes after the poison has been given. The sodium dihydrogen phosphate showed itself superior to the tartaric acid by having this effect invariably, while with the tartaric acid combination convulsions and deaths have occurred. The dose of 10 mg. per kilogram (Table 4) is invariably fatal; and yet the addition of tartaric

acid or of sodium dihydrogen phosphate to fuller's earth has enabled it to prevent effects, if administered at the same time; but not, if administered five minutes later. Against 15 mg. per kilogram, fuller's earth with sodium dihydrogen phosphate has been useless so far as saving life of rabbits is concerned; but it, no doubt, postponed the effects to a considerable degree, as will be seen from the following observations:

Rabbit D 10, weighing 907 gm. was given 0.015 gm. strychnin with 4.50 gm. each of fuller's earth and of sodium dihydrogen phosphate. Death occurred in four hours and thirty minutes.

Rabbit D 11, weighing 2,660 gm. was given 0.040 gm. of strychnin with 13.3 gm. each of fuller's earth and sodium dihydrogen phosphate. Death occurred in thirty-two hours.

Table 5 shows that a dose of 2 mg. per kilogram is invariably fatal to dogs. The addition of fuller's earth saved life, but did not prevent convulsions. The addition of tartaric acid and of sodium dihydrogen phosphate frequently prevented convulsions and generally saved life. However, emesis was so frequently produced as to vitiate the results. Therefore morphin was given about one hour before the administration of the poison. This preliminary administration of morphin, of course, produced vomiting and often defecation within the hour, followed by a depression of the vomiting center, so that the doses were now regularly retained. Experiments A 3 to A 6 (Table 5) show that the morphin does not save the life of the animal, though it delays results. Experiments D 3 to D 6 show that fuller's earth and sodium dihydrogen phosphate are capable of saving life, even though no emesis takes place. The fact that it was possible to save the life of morphinized dogs, even if the antidote was given five, ten and fifteen minutes after the poison, while the antidote failed to produce such result without the morphin, is most interesting and requires further study. Possibly it is due to delayed evacuation of the stomach.

TABLE 6.—EFFECT ON RABBITS OF FATAL DOSES OF MORPHIN GIVEN ORALLY WITH AND WITHOUT FULLER'S EARTH

Rabbit		Dose			Effects	
No.	Weight, Gm.	Morphin Sulph. per Kg.	Accom. (+) or followed	Fuller's Earth	Symptoms	Result
A 1	880	1 mg.	.....	0	Depr. Conv. in 2 hrs.	Death in 3 hrs.
B 1	794	1 mg.	+	20.00	Some depression.....	Recovery.
B 2	1,248	1.6 mg.	+	50.00	Some depression.....	Recovery.
B 3	1,134	2 mg.	+	56.25	Some depression.....	Recovery.
B1 1	510	1 mg.	10 min. later	12.50	Some depression.....	Recovery.
B1 2	624	1 mg.	15 min. later	15.75	Some depression.....	Recovery.
B1 3	1,134	1 mg.	20 min. later	30.00	Depr. Conv. in 30 min.	Death in 2 hrs.
B1 4	740	1 mg.	20 min. later	18.50	Depr. Conv. in 2 hrs...	Death in 3 hrs.

A dose as large as 4 mg. per kilogram makes demands on the antidote that it is not able to meet, as will be seen from the following experiments:

Dog C 6, weighing 9 kg., was given, at 9:15 a. m., 0.036 gm. strychnin with 5.4 gm. each of fuller's earth and tartaric acid. It was found dead next morning, no convulsions having been observed.

Dog C 7, weighing 13.5 kg. was given at 9:30 a. m. 0.108 gm. strychnin with 9.1 gm. each of fuller's earth and of tartaric acid. There was slight emesis at 11 a. m. The animal was found dead next morning, no convulsions having been observed.

ANTIDOTAL VALUE IN MORPHIN POISONING

Table 6 shows that the antidotal value of fuller's earth is much greater for morphin than it is for strychnin. This is probably due to the fact, shown in Tables 1 and 2, that morphin is much more readily removed from solutions by fuller's earth than are any of the other alkaloids, as well as to the slight solubility of the alkaloid morphin and the large dose needed to produce death in these animals. It will be noted that the mere addition of fuller's earth saved rabbits from as much as twice the fatal dose of morphin, and that fuller's earth was still capable of saving life, if given ten and fifteen minutes later; but not if given twenty minutes later. The administration, at intervals, of fuller's earth in morphin poisoning in human beings, even after hypodermic administration of the poison or evacuation of the stomach, appears indicated; as the morphin excreted into the stomach would be adsorbed by the clay and its reabsorption prevented or at least delayed.

TABLE 7.—EFFECT ON DOGS OF FATAL DOSES OF COCAIN WITH AND WITHOUT MORPHIN AND FULLER'S EARTH

Dog		1 Hour Prev.	Dose		Effects	
No.	Weight, Gm.	Hypo. of Morphin, 5 Mg. per Kg.	Cocain, Gm.	Fuller's Earth	Symptoms	Result
A 1	7,250	0	0.1 per kg.	0	Convulsions in 25 min.	Death in 90 min.
A 2	3,000	0	0.1 per kg.	0	Convulsions in 15 min.	Death in 20 hrs.
A 3	5,800	0	0.2 per kg.	0	Convulsions in 7 min.	Death in 16 min.
A 4	7,500	0.040	0.1 per kg.	0	Whining occ.	Recovery.
A 5	5,946	0.025	0.1 per kg.	0	Depr., later excit.	Recovery.
A 6	6,850	0.035	0.2 per kg.	0	Convulsions in 220 min.	Death in 260 min.
A 7	7,140	0.035	0.2 per kg.	0	Convulsions in 15 min.	Death in 30 min.
A 8	4,700	0.050	0.2 per kg.	0	Depression.....	Death in 20 hrs.
B 1	6,000	0	0.1 per kg.	60.0	Emesis in 85 min.	Recovery.
B 2	12,000	0.600	0.1 per kg.	120.0	0	Recovery.
B 3	6,800	0.035	0.2 per kg.	136.0	0	Recovery.
B 4	4,800	0.025	0.2 per kg.	96.0	0	Recovery.
B 5	3,740	0.020	0.2 per kg.	76.0	0	Recovery.

ANTIDOTAL VALUE IN COCAIN POISONING

In view of the local anesthetic quality of cocain, it is of interest to note that the dog B 1 (Table 7), that received it together with fuller's earth, vomited. Evidently the compound produced by fuller's earth with cocain is not decomposed in the stomach, which is entirely in accord with the general tendency of the alkaloidal fuller's earth compounds not to give up the alkaloid to an acid solution. This made it necessary again to use hypodermic injections of morphin, one hour previously, to prevent the emesis. However, inasmuch as morphin is an antagonist to cocain, as will be seen by comparing the result in A 1 and A 2 with A 4 and A 5, it was necessary to use a large fatal dose of cocain (0.2 gm. per kg.), in order to have a fatal dose in the presence of morphin. The antidotal value of fuller's earth under these circumstances is demonstrated by the uniformly fatal results in experiments A 6, A 7 and A 8, as compared with the uniformly negative results in Experiments B 3, B 4 and B 5. Evidently fuller's earth is an antidote to cocain, and it does not need acid to produce this effect, at least in

the presence of morphin, which probably enhances the antidotal effect of fuller's earth by delaying the emptying of the stomach.

ANTIDOTAL VALUE IN NICOTIN POISONING

Rabbits are killed within twenty minutes by 0.20 gm. nicotin per kilogram, as will be seen from Table 8. The addition of fuller's earth to such a dose is followed by recovery. A dose of 0.40 gm. per kilogram is fatal even when fuller's earth and sodium dihydrogen phosphate are added. If the antidote is given five minutes after the poison was administered, it is unable to save life. Evidently nicotin acts too rapidly to admit of any interval between the giving of the poison and of the antidote.

ANTIDOTAL VALUE IN IPECAC POISONING

Emetic Dose.—If two dogs of similar size and with empty stomachs are chosen, and one of these is given, by means of the stomach tube, 0.3 c.c. per kilogram of fluidextract of ipecac mixed with ten times the volume of water, while the other receives the same dose with the addition of 3 gm. of active fuller's earth per cubic centimeter of fluidextract used, the first dog will vomit profusely and many times—usually not until after half an hour, but within one hour—and soon afterward may have bowel evacuations, which sometimes become bloody. The other dog will show no effects whatever excepting perhaps, occasionally, a looseness of the bowels on the next day.

Fatal Dose.—A dose of 1.5 c.c. of fluidextract of ipecac per kilogram has been found uniformly fatal in dogs, as will be seen from the following experiments:

Dog A, weighing 15.5 kg. was given 23.25 c.c. of fluidextract of ipecac, diluted with 232.5 c.c. of water, at 9:42 a. m. Formed bowel movement occurred at 11:25; vomiting at 12, and again at 12:15; semi-liquid bowel movement at 12:30. Several other attacks of emesis occurred during the afternoon, the animal refusing food, but drinking water freely. The next day it was found that the animal had bloody bowel movements; and on this day it died at 10 a. m. Necropsy showed hemorrhagic gastro-enteritis. The urine obtained from the bladder contained albumin and a few red blood corpuscles, but no casts.

Similar results were obtained in three other dogs. A different result was obtained in Dog E. This dog, weighing 7.25 kg. was given 10 c.c. of fluidextract of ipecac diluted with 100 c.c. of water. Within half an hour, the dog showed marked depression, salivation, and had a fluid defecation, but did not vomit. The animal died within five hours after the administration of the poison, without having had emesis or bloody purging. On post-mortem examination, performed twenty hours later, the gastro-intestinal tract was found pale and without gross evidence of inflammation. Death had evidently occurred too soon for inflammation to have developed.

Entirely different is the result when the fatal dose of fluidextract of ipecac is mixed with fuller's earth, 3 gm. per cubic centimeter, as may be seen from the protocol of experiment on Dog J. This animal, weighing 9.5 kg., was given 14.25 c.c. of fluidextract of ipecac diluted with 142.5 c.c. of water, to which 42.75 gm. of fuller's earth were added. There was no effect whatever, excepting that the animal refused food and drink for several hours afterward. During the succeeding days the animal was perfectly normal. Its bowel movements were hard and clay-colored lumps. Its urine was free from albumin. The animal was chloroformed five days afterward. Its gastro-intestinal tract was found normal. Identical results were obtained in three other dogs. On the other hand, one dog whose stomach was full of food vomited shortly after administration of the dose, probably from overdistention of the stomach. Two other dogs recovered from twice the surely fatal dose of fluidextract of ipecac, namely, 3 c.c. of the fluidextract per kilogram, diluted with ten times the amount of water to which a proportionate amount of fuller's earth had been added. Both dogs had a single emesis soon after injection, probably from overdistention of the stomach, for the bulk of the dose is considerable; but developed no further results of any importance and recovered completely, as may be seen from the protocol of one of these experiments:

A dog, weighing a little less than 12 kg., was given 35 c.c. of fluidextract of ipecac with 350 c.c. of water and 14 gm. of Lloyd's reagent. The dose was administered at 9:50 a. m. Shortly afterward, profuse salivation appeared and lasted for over an hour. Twenty minutes after the injection a single emesis occurred, the vomit consisting of thin watery fluid with a small amount (3 gm.) of the injected preparation. There was no further emesis. A fine muscular tremor appeared at 12 m., and lasted about an hour. Complete recovery took place.

TABLE 8.—EFFECT ON RABBITS OF FATAL DOSES OF NICOTIN, GIVEN ORALLY WITH AND WITHOUT FULLER'S EARTH AND ACID

Rabbit		Dose				Effects	
No.	Weight, Gm.	Nicotin per Kg.	Accom. (+) or Foll.	Fuller's Earth	Acid	Symptoms	Result
A 1	1,560	0.10	.....	0	0	0	Recovery.
A 2	964	0.20	.....	0	0	Convulsions in 15 min.	Death in 20 min.
A 3	900	0.20	.....	0	0	Convulsions in 12 min.	Death in 20 min.
A 4	1,416	0.20	.....	0	0	Convulsions in 10 min.	Death in 13 min.
B 1	740	0.20	+	18.0	0	0	Recovery.
B 2	800	0.20	+	16.0	0	Depression in 30 min.	Recovery in 60 min.
B 3	570	0.40	+	23.0	0	Depression...	Death in 120 min.
B1 1	740	0.20	5 min.	18.0	0	Convulsions in 11 min.	Death in 30 min.
D 1	900	0.20	+	10.0	5.0 NaH_2PO_4	0	Recovery.
D 2	680	0.40	+	13.6	6.8 NaH_2PO_4	?	Death within 20 hrs.

Evidently fuller's earth is a powerful antidote to ipecac. To test its practical value in case of poisoning, the antidote was administered at varying intervals of time after the introduction of the poison with results that might best be shown by tabulation.

It will be noted (Table 9) that, when the fuller's earth was given mixed with the poison, no damage occurs.

When the fuller's earth was given ten minutes afterward, the animal was seriously affected by the poison, but recovered. Fuller's earth was incapable of saving animals when administered twenty minutes or longer after the poison; but it rendered the picture of intoxication milder and postponed death in inverse proportion to the length of time that elapsed between the administration of the poison and of the antidote.

ANTIDOTAL VALUE IN ACONITIN POISONING

Table 10 shows that fuller's earth has some antidotal value in this condition also. It is difficult, however, to arrive at a definite judgment as to the degree of its value. It produces emesis even after the previous administration of morphin. That the emesis does not save life, will be seen from the fact that all the dogs that died vomited. They generally vomited more profusely than the dogs that recovered. Therefore emesis was probably not a factor in those cases in which recovery took place. It will be noted that in practically all the animals that did recover rather marked symptoms occurred: emesis generally the next day, and in several of them bloody defecation, which in one case lasted for several days. The death of the animal D 5 may not have been due to the poison, as the animal was sick before it was subjected to the experiment, as was discovered subsequently. In another series of animals, in which the alkaloid aconitin (crystallized) was used—not the salt—death occurred in every case, even when fuller's earth or fuller's earth with acid were added, the fatal result being postponed for from twenty-four to forty-eight hours. Evidently the free alkaloid does not combine with fuller's earth as readily as does the salt.

TABLE 9.—RESULTS OF ADMINISTRATION OF FATAL DOSE (1.5 C.C. PER KG.) OF FLUIDEXTRACT OF IPECAC, WITH AND WITHOUT FULLER'S EARTH AT VARYING INTERVALS

Dog	Administration	Emesis		Defecation	Result	Post-Mortem Examination
		Onset, Min.	Times			
A	Ipecac.....	138	5	Bloody.....	Death in 24 hours.	Violent gastro-enteritis.
E	Ipecac.....	...	0	Liquid not bloody.	Death in 5 hours.	Gastro-intestinal tract pale.
F	Ipecac and fuller's earth 40 minutes later.	...	0	Liquid not bloody.	Death within 20 hours.	Gastro-enteritis.
G	Ipecac and fuller's earth 30 minutes later.	55	6	Bloody.....	Death in 25 hours.	Gastro-enteritis.
H	Ipecac and fuller's earth 20 minutes later.	70	1	Bloody.....	Death within 44 hours.	Less severe gastro-enteritis.
I	Ipecac and fuller's earth 10 minutes later.	22	13	Bloody.....	Aborted 5 fetuses. Lived for 5 days.	Gastro-intestinal tract showed evidences of past enterocolitis.
J	Ipecac and fuller's earth mixed.	...	0	Hard, clay-colored.	Recovery....	Gastro-intestinal tract normal.

TABLE 10.—EFFECT ON DOGS OF FATAL DOSE OF ACONITIN NITRATE, CRYSTALLIZED (MERCK'S), (4 MG. PER KILOGRAM), GIVEN ORALLY, WITH AND WITHOUT FULLER'S EARTH AND ACID

Dog		Morphin Sulph., 5 mg. per kg. Hypo. 1 Hour Prev. Gm.	Dose			Effects	
No.	Weight, Gm.		Aconitin	Fuller's Earth	NaH_2PO_4	Symptoms	Result
A 1	6,350	0.032	0.0254	0	0	Profuse emesis in 5 min.	Death in 50 min.
A 2	5,096	0.025	0.0204	0	0	Conv., emesis in 4 hours.	Death in 5 hrs.
B 1	8,600	0.043	0.0344	17.20	.....	0	Recovery.
B 2	10,800	0.055	0.0432	21.60	.....	Emesis next day	Recovery.
B 3	4,760	0.025	0.0190	7.60	.....	Emesis (slight) in 6 hours.	Death in 24 hrs.
D 1	9,500	0.048	0.0380	19.00	19.00	Emesis next day	Recovery.
D 2	9,060	0.045	0.0362	18.10	15.10	Emesis next day. Bloody defecation.	Recovery.
D 3	8,600	0.043	0.0344	13.76	13.76	Emesis, clear in 2:30 hours.	Recovery.
D 4	6,570	0.033	0.0263	13.14	13.14	Bloody defecation next day.	Recovery.
D 5	7,250	0.036	0.0290	14.50	14.50	Emesis in 1:30 hours.	Death in 44 hrs.

TABLE 11.—EFFECT ON DOGS OF FATAL DOSES OF COLCHICIN (2 MG. PER KILOGRAM), GIVEN ORALLY, WITH AND WITHOUT FULLER'S EARTH AND ACID

Dog		Dose				Effects	
No.	Weight	Preliminary Morphin, 0.005 per Kg.	Colchicin	Fuller's Earth	Acid	Symptoms	Results
A 1	19,500	0	0.039	0	0	Vomiting in 1:30 hours. Bloody defec. in 4:30 hours.	Death with violent gastritis and colitis within 20 hrs.
A 2	7,700	0.0375	0.0155	0	0	Vomiting and bloody defec. next day.	Death with violent gastritis and colitis in 30 hours.
D 1	9,300	0.050	0.0186	5.60	5.60 NaH_2PO_4	Bloody defec. next day.	Death with less severe colitis in 68 hours.

ANTIDOTAL VALUE IN COLCHICIN POISONING

The antidotal value of fuller's earth against colchicin poisoning is, no doubt, very slight, even though the number of experiments on this point, as shown by Table 10, may be insufficient. With the comparative indifference, however, of colchicin toward fuller's earth, as shown in Table 2, a different result could hardly be expected.

PERSONAL EXPERIMENTS WITH METHYLENE BLUE AND FULLER'S EARTH

To put the question to an approximate test whether fuller's earth would be likely to act in human beings as it does in the lower animals, I and one of my colleagues took doses of methylene blue with and without fuller's earth with the following results:

When a dose of 0.010 gm. of methylene blue is taken a dark green color appears in the urine within a short time and disappears within twenty-four hours. If 1.0 gm. of fuller's earth is added to 0.010 gm. of methylene blue in solution, the urine acquires a faint greenish tint for twenty-four hours; the difference between the two specimens of urine being striking.

The results of larger doses might probably best be presented as in Table 12.

It will be noted that fuller's earth alone postponed the appearance of the discoloration, lessened the duration of intense discoloration, but not the duration of slight discoloration. The addition of a small amount of sodium dihydrogen phosphate did not increase very greatly the effect of fuller's earth. The addition of a larger dose that acted on the bowel within an hour and thirty minutes markedly lessened the period and amount of discoloration. It seems safe to

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conclude that *fuller's earth, especially when combined with a laxative dose of sodium dihydrogen phospate, is capable of greatly lessening in the human the absorption of substances that are readily adsorbed by fuller's earth.*

CONCLUSIONS

1. Alkaloidal fuller's earth compounds do not act on the stomach; but are gradually dissociated in the intestine, producing a delayed and milder general action.

2. Fuller's earth has antidotal value in morphin, cocain, nicotin, and ipecac poisoning. It has less value in strychnin and in aconitin poisoning, though even in these conditions it is capable of saving life, when combined with sodium dihydrogen phosphate. In colchicin poisoning it is of little value.

3. The power of adsorbing alkaloids is strongly developed in some fuller's earths and very feeble in others. The adsorptive value of commercial fuller's earths should be stated by the dealers; and pharmacists should demand specimens of high activity. Lloyd's reagent possesses this power to the highest degree.

4. Fuller's earth is not synonymous with kaolin, as the United States Dispensatory and the National Dispensatory would lead one to infer. It is a substance with markedly different properties.

TABLE 12.—RESULTS OF DOSES OF METHYLENE BLUE WITH AND WITHOUT FULLER'S EARTH AND SODIUM DIHYDROGEN PHOSPHATE

Experiment	Dose	Effect
1	0.050 gm. methylene blue	Urine green in 1 hr. 25 min., lasting for 2½ days.
2	0.050 gm. methylene blue	Urine green in 9 hrs., lasting for 24 hrs.
	2.500 gm. fuller's earth..	Traces of discoloration occasionally for 2 days longer.
3	0.050 gm. methylene blue	Urine green in 10 hrs. 30 min., lasting for 17 hrs.
	2.500 gm. fuller's earth..	Traces of discoloration occasionally for 2 days longer.
	2.500 gm. NaH_2PO_4.....	
4	0.050 gm. methylene blue	Bluish brown liquid defecation in 1 hr. 30 min.
	2.500 gm. fuller's earth..	Urine light green in 10 hrs.
	5.000 gm. NaH_2PO_4.....	Urine green in 14 hrs., lasting for 7 hrs.
		Traces of discoloration occasionally for 12 hrs. longer.

CHRONIC APPENDICITIS, PYLOROSPASM AND DUODENAL ULCER

A PRELIMINARY NOTE *

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DETROIT

Two years ago I called attention to the fact that in chronic appendicitis, though unsuspected, a continuous firm pressure with the ends of the first three fingers over McBurney's point frequently induced distress or pain in the epigastrium.[1] Recently, while examining a case of chronic appendicitis with the Roentgen fluoroscope, I was surprised to find that I was able to induce a pylorospasm by this pressure over the appendix. The pressure also produced the reflex pain in the epigastrium of which the patient complained. I am inclined to believe that this pain was due to spasm of the pylorus.

I wish to report the following case:

Miss L., aged 23, American, with negative family history, had had mastoiditis on the left side two years before. She had stomach trouble for three or four years, with an acute attack, sixteen months before, of epigastric pain and nausea, not associated with jaundice or vomiting. For the past eight months she had complained of a pressing sensation in the upper abdomen occurring about thirty minutes after eating. This sensation was accompanied by eructations and was somewhat relieved by the taking of food.

The physical examination showed a well-nourished young girl, presenting only epigastric pain on deep pressure over McBurney's point.

With the Roentgen fluoroscope it was seen that the bismuth and buttermilk introduced tended to remain in the upper pole of the stomach. The walls of the stomach were parallel; the pyloric portion was well outlined; there were good contractures, and the duodenal cap was well formed and pointed upward. Pressure over the appendiceal region caused a spasm of the lower quarter of the stomach and the first portion of the duodenum. This contraction was so pronounced that it prevented the passage of the bismuth meal through the spastic areas. On releasing the pressure, we noticed that the pylorus and duodenum relaxed and the bismuth could be plainly seen passing through the pyloric canal and the first portion of the duodenum into the second and third portions of the latter.

If this demonstration can be confirmed, I believe it will be found of considerable importance, as pointing the way in which we can utilize reflex spasm of the stomach and duodenum in diagnosing disease in a remote part of the abdomen.

This phenomenon of spasm of the pylorus and first portion of the duodenum induced by pressure in the appendicular region is easily understood when we recall that the appendix has a rich nerve connection derived from the superior mesenteric plexus of the sympathetic, and from the cardiac, hepatic and gastric plexuses. Therefore any irritation originating in the appendix will readily send impulses to the other viscera. Because of the direct nerve connection between the appendix, pylorus and duodenum, it follows that a chronic appendicitis may induce over this arc a reflex gastrospasm, pylorospasm or enterospasm.

If it be granted that the pain elicited in the epigastrium by pressure over the appendiceal region in chronic appendicitis is due to pylorospasm caused by such pressure, the etiology of the gastric symptoms and the hyperchlorhydria associated with appendicitis is clear.

In the case reported we have an interesting demonstration of what we have long believed, that the gastric distress, eructations and other symptoms of appendicitis are due to pylorospasm.

It may be that this will suggest an explanation for the cause of the frequent occurrence of duodenal ulcer in chronic appendicitis, on the basis that the associated spasm of the pylorus and first part of the duodenum induces an ischemia, which allows the gastric juice to attack the mucosa, the resistance of which has been lowered.

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* Read at the annual meeting of the American Gastro-Enterological Association, Baltimore, May 10, 1915.

1. Aaron, Charles D.: A Sign Indicative of Chronic Appendicitis, THE JOURNAL A. M. A., Feb. 1, 1913, p. 350.

The Inactive Scholar.—A mere display of absorbed knowledge does not make a scholar. He is not a passive creature. He is continually active in making old and creating new knowledge.—Theobald Smith: *Boston Med. and Surg. Jour.*

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 1763)

XXI

DIAPHORETICS

One of the functions of the sweat glands is to provide moisture, which by its evaporation cools the body, the secretion of sweat being increased when the production of heat by the body is increased.

This secretion is controlled largely by the heat regulating centers, and when the blood flowing through the carotids is warmed it causes an increased secretion, as does the warming of the surface of the body also.

The activity of the sweat glands is influenced less by the blood supply than is that of most of the glands of the body, and profuse sweating may occur when the skin is pale, and, on the other hand, there may be little secretion when the skin is flushed and hot in fever. However, heat increases the excitability of the nerve endings in the sweat glands and an abundant supply of blood often promotes the secretion.

The composition of the sweat and the daily amount secreted varies widely under normal conditions, and still more widely under pathologic conditions.

The amount of sweat secreted in twenty-four hours by a healthy man with light exercise probably does not often fall below 500 c.c. (1 pint), but with hard work during hot weather the secretion may become more than ten times as active, and under pathologic conditions, as during sudden collapse, the amount secreted in a few minutes may equal the amount which is secreted in an entire day under ordinary conditions.

The sweat contains small amounts of salts, of which sodium chlorid constitutes much the larger amount, and usually only insignificant amounts of organic matter, but when the activity of the glands is greatly increased, during severe muscular exercise or by hot vapor baths, the amount of organic matter is increased notably, and when the kidneys become incapable of secreting urea as fast as it is formed, so that it accumulates in the blood, a considerable amount is found in the sweat, and it is commonly stated that crystals of urea sometimes may be found on the skin under those conditions.

It seems probable that one of the functions of the sweat glands is to provide a means of eliminating water from the blood without a corresponding loss of its salts, but when the loss of water from the blood is made up by absorption either from the gastrointestinal tract or from the tissues, the loss of salts may be important, and the blood may then have a lower concentration than before active sweating was induced. From this it would seem that the sweat glands supplement the action of the kidneys to an important degree.

Sweating also serves to remove large numbers of bacteria from the deeper layers of the skin, and it is probable that with the profuse sweating of exercise that this action is not without importance.

The methods of inducing active sweating without the use of drugs do not call for discussion in this place; the actions of the analgesic antipyretics and various vasodilators have been discussed elsewhere.

PILOCARPIN

Pilocarpin stimulates all parasympathetic nerve endings and the sympathetic nerve endings in the sweat glands, which, as previously stated, behave toward several drugs like the parasympathetic.

The sweating begins in about fifteen minutes and lasts about two hours. The stimulation of the chorda causes profuse salivation, while the secretion of the bronchial glands may embarrass respiration, and pilocarpin is therefore contra-indicated in patients in whom there is a predisposition to edema of the lungs.

Pilocarpin stimulates the vagus endings, causing moderate slowing of the heart rate, but the action differs essentially from that of digitalis, for the stimulation resulting from small doses tends to pass into depression so that the heart rate increases, and when large doses have been administered the stimulation is brief and the depression almost as great as that resulting from atropin. Hence it is impossible to induce an important degree of slowing of the heart by doses of pilocarpin.

The action of physostigmin resembles that of pilocarpin qualitatively, but it is so much more depressant than pilocarpin to the central nervous system in doses producing an equal diaphoretic effect that it is never used for that purpose.

THERAPEUTIC USES

Sweating serves to increase the concentration of the blood, thus promoting the absorption of dropsical effusions if the amount of water ingested is restricted sufficiently.

Profuse sweating serves to remove a certain amount of various substances which are usually excreted by the kidneys, and while the amount of nitrogenous matter normally excreted in the sweat during rest is insignificant, a much larger amount is excreted during profuse sweating.

The amount of urea eliminated during even profuse sweating would seem to be too small to account for the improvement which results from sweat baths in nephritis and uremic poisoning, hence one cannot say to what the improvement is attributable. It is possible that the removal of chlorids from the blood may relieve the kidney, for, as previously stated, sodium chlorid is actually injurious to the kidneys under certain circumstances.

It is popularly supposed that other toxic substances are excreted in this way, but our knowledge of this subject is as yet very imperfect.

A popular treatment of "colds" consists in the use of large quantities of hot lemonade while the body is kept warm to induce sweating. A hot mustard foot bath is commonly taken at the same time, and this treatment frequently results in the disappearance of the symptoms, probably because the alteration in the distribution of the blood which is induced relieves the local congestion in the nasal passages.

The same objects are often accomplished by the use of the compound powder of ipecac and opium and the mustard foot bath, or by a hot bath taken just before retiring in a warm room; this induces active sweating which continues for some hours, if the patient is kept warmly covered.

Chronic rheumatism and gonorrheal arthritis are often treated by placing the affected limb in a hot-air

* This is the twenty-first of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

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chamber for half an hour, while maintaining a temperature of from 70 to 90 C. (150 to 180 F.).

A limb, or even the whole body except the head, may be subjected to a high temperature for a short time if care is taken to provide for a sufficient circulation of air to insure the evaporation of water as fast as it is eliminated in the sweat. Heating a limb or the body causes the body temperature to rise—sometimes as much as several degrees—and cold water or an ice bag should be applied to the head to prevent the effects on the brain which would ensue.

Solution of ammonium acetate and spirit of nitrous ether are commonly used as diaphoretics during fevers, but their action is feeble, and we have many better means of inducing sweating.

Pilocarpin is used as a diaphoretic in certain diseases of the skin, and it is generally credited with the property of stimulating the growth of the hair, but failure is far more common than success when it is used in baldness.

Doses just short of that required to induce sweating are sometimes used to relieve itching in generalized acute eczema, urticaria and other conditions. Its use as a miotic has been discussed.

Pilocarpus owes its therapeutic effects to the pilocarpin which it contains, but it also contains pilocarpidin, which has an atropin action, hence it would seem that there is never any occasion to use the crude drug rather than pilocarpin.

DOSAGE

The diaphoretic dose of the compound powder of ipecac and opium is 0.6 gm. (10 grains); the dose of the hydrochlorid or nitrate of pilocarpin is from 0.001 to 0.01 gm. (1/60 to 1/6 grain).*

EVACUANTS

Drugs that are used to cause evacuation of the bowels are variously classified; according to their origin and chemical nature; according to the intensity of their action, and according to their general mode of action. The term laxative is applied to those which cause a nearly normal movement of the bowel, attended with little or no pain; if the action is much more vigorous and several movements are induced, the term purgative or cathartic is employed; and when a large amount of fluid is evacuated with the feces the action is termed drastic, or hydragogue.

For practical purposes it will be convenient to discuss the evacuants with reference to the part of the intestine on which they exert their main action, for a drug may be laxative or drastic, dependent on the dose employed and other conditions, and evacuants must be chosen with strict regard to their mode of action and the seat of this action.

The processes of digestion are so closely related to the intestinal movements that a brief discussion of the physiology of the gastro-intestinal tract is indispensable for a clear presentation of the subject of evacuants.

The stomach is an automatic organ, containing within its walls the plexuses of Meissner and Auerbach, on which its automaticity probably depends; at any rate the surviving excised stomach is capable of maintaining regular movements, and the processes of secretion of gastric juice may take place after the connection with the central nervous system has been severed, but the stomach is influenced both as to movements and secretions, by two sets of nerves from the central nervous system, the parasympathetic (vagus), the functions of which are here mainly motor, and the sympathetic (splanchnic) which is mainly inhibitory. The control of these two nerves is so coordinated that when one of them is stimulated the other is usually depressed.

The functions of the stomach are to secrete the gastric juice and to maintain movements which serve to mix the food with this juice and to drive the digested food into the intestine.

The length of time during which food remains in the stomach varies with the nature of the food, and it may be influenced greatly by drugs. Proteins are digested more slowly than carbohydrates, and fats pass still more slowly into the intestine, and if they be taken before proteins and carbohydrates they delay their passage through the pylorus.

The sphincter of the pylorus relaxes periodically to allow the fluid portions of the stomach contents to pass into the intestine. An alkaline reaction in the duodenum promotes, an acid reaction delays, this relaxation, but when water or a dilute solution of a salt is taken during digestion, it passes along the lesser curvature of the stomach, and reaching the pylorus without mixing with the rest of the stomach contents, passes rapidly into the intestine. This is of some practical importance with reference to the action of certain of the purgatives.

Strong stimulation of the vagus, such as toxic doses of morphin induce, cause spasmodic contraction of the pylorus and the passage of the stomach contents may be delayed indefinitely. Stimulation of the splanchnic causes cessation of the movements of the normal stomach and relaxation of the pylorus, but such stimulation of the splanchnic cannot overcome strong vagus stimulation. In such cases depression of the vagus is more effective, hence atropin is used to lessen excessive movements of the stomach in gastric ulcer. This also serves to explain why large doses of morphin are contra-indicated in that condition, but small doses, sufficient to lessen pain, may be used, for the gastric effects of vagus stimulation are not usually elicited from less than 10 mg. (1/6 grain), while half that amount exerts a marked analgesic action.

Atropin is not so effective in quieting the movements of the stomach when these are due to diminished tone of the splanchnic, for then the automatic mechanism alone suffices to increase the activity of the movements and depression of the vagus is then of little value. Unfortunately, we have no drug which is of much use in increasing the tone of the sympathetic, unless it be ergot.

The mechanism controlling the activities of the intestines is much like that of the stomach. Peristaltic movements in the intestine consist of waves of contraction preceded by relaxation of the musculature of the wall; these are automatic, but they are influenced by parasympathetic (vagus) and sympathetic (splanchnic) nerves.

The function of the parasympathetic nerve to the intestine is mainly motor and that of the sympathetic is mainly inhibitory, as in the stomach, but it seems probable that there are some inhibitory fibers in the vagus, and some motor fibers in the sympathetic. The vagus is distributed to the intestine as far down as the descending part of the colon, where its place as a parasympathetic motor nerve is taken by the erigens, on which atropin and some other drugs act in the

* On account of lack of space the materia medica of this group is omitted from THE JOURNAL. It will be included when the series is published in book form.

same way that they do on the vagus, but less effectively. The nerves which supply the colon and rectum also supply the uterus, which explains in part the effect of certain purgatives on that organ.

Stimulation of the parasympathetic (vagus or erigens) nerve to the intestine causes active peristalsis, and strong stimulation of certain centers in the medulla is followed by diarrhea. The intestinal movements are also subject to psychic influence, but the mechanism of this is not understood. It is possible that the intestinal peristalsis which accompanies certain emotions may be due in part to an increase of carbon dioxid in the blood, this increase being due to respiratory depression, for carbon dioxid and hydrogen sulphid are normal stimuli to the intestine, causing peristalsis.[1]

The movements of the large intestine differ considerably from those of the small. The contents of the colon are forced along to the descending part because of overfilling from the ileum, and such movements as occur in the ascending and transverse portions are in the reverse direction, serving to keep the contents thoroughly mixed and promoting absorption. In the descending colon the contents are driven very slowly toward the rectum by means of peristaltic movements much like those in the small intestine. It is uncertain whether the rectum normally contains fecal matter except just before defecation, but there is no reason to doubt that its distention by feces causes a desire to go to stool. The retention of feces in the rectum may lead to dilatation, and the development of a form of chronic constipation.

Anything which increases the bulk of the intestinal contents will promote intestinal peristalsis, for this distention of the intestine seems to be one of the chief stimuli to the automatic mechanism. The fluid contents of the intestine may be increased by augmented gastric or intestinal secretion, or by diminished absorption from the intestine into the circulation.

Estimates of the total amount of fluid secreted by the different digestive organs vary considerably, but it may be accepted that from 3 to 5 liters (from 6 to 10 pints) of fluid are secreted daily by the salivary, gastric and intestinal glands and the pancreas and liver together, and that nearly all of this, together with the liquefied food, enters the small intestine, and a large part of this reaches the colon. From this it is evident why so much fluid may be removed from the body by even a mild, but rapidly acting, evacuant. The composition of the blood can be altered rapidly in this way, and especially by those cathartics which stimulate the intestinal glands to increased secretion. With the changes in the composition of the blood thus induced are associated corresponding changes in the secretions and excretions throughout the body, for most of the glands are influenced profoundly by the composition of the blood, as well as by changes in the amount with which they are supplied.

The passage of fluid through the small intestine requires from eight to twenty hours, as a rule (only a few minutes in some conditions of hyperexcitability of the intestine), and the passage through the large intestine requires a shorter period, during which active absorption of fluid takes place, leaving the fecal mass composed mainly of bacteria, undigested food particles, such as the lignin of vegetables, detritus of the intestine, and various principles in small amount, together with enough moisture to make it plastic.

If the intestinal movements are unduly sluggish, opportunity is afforded for the absorption of too large a proportion of fluid, the feces become hard, dry and difficult to propel by the normal peristaltic movements, and it becomes necessary to soften such masses before they can be evacuated.

There are various physiologic ways of preventing this sluggishness of the intestinal movements, and it is obvious that such means should be tried before resorting to the use of drugs. The taking of an adequate amount of cold (not iced) water between meals affords the simplest means of hastening peristalsis in the small intestine, and thus indirectly, in the large, for, as previously stated, when water is taken during digestion it passes rapidly into the intestine, and probably even more rapidly if taken when the stomach is empty.

Some stress is placed on the taking of this cold water between meals, rather than with them, for secretion of the digestive fluids depends to some degree on the amount of fluid in the circulation and tissues. If a normal amount of the digestive secretions is available it supplies the fluid which is requisite for normal peristalsis, and it is only when this has been absorbed, at least in large part, that the additional water taken between meals is required to maintain the bulk of intestinal fluid which is required for active peristalsis.

Some stress is also placed on the use of cold water rather than hot fluids, such as tea and coffee, for hot fluids promote rapid absorption from the small intestine and even less fluid will then reach the colon. It seems probable that the constipating effect which tea and coffee often exert is due in part to the fact that the rapid absorption of fluid from the small intestine induces active diuresis, which is further augmented by the action of the caffein which they contain, and that this diuresis increases the viscosity of the blood, which in turn diminishes the gastric and intestinal secretions, the increased absorption from the intestine, and the diminished secretion into it cooperating to deprive the intestine of its normal stimulus to peristalsis.

A glass of cold water taken on rising is often sufficient to cause prompt evacuation of the bowels.

Laxatives increase the peristalsis slightly and the feces are evacuted before they become dehydrated in the colon.

Many persons eat too little habitually, and without advocating an excessive diet, it is a matter of common observation that one who suffers from mild chronic constipation associated with a spare diet will often have a normal stool soon after taking a large meal.

It is often urged that a part of the food should not be too readily digestible, and while it is true that indigestible food does promote peristalsis, it does not appear to be necessary, provided that the diet is abundant.

A good appetite, which insures the taking of a fairly large amount of food, and good digestion, which insures the secretion of an adequate amount of fluid in the gastro-intestinal tract, are far more effective in securing active peristalsis than a small amount of indigestible food would be, for undigested food constitutes only an insignificant part of the normal intestinal contents, and furthermore, soft indigestible matter always invites the activity of pathogenic micro-organisms.

1. Certain emotions, such as fear, exert two types of action in different individuals; in one type the effects are referable to stimulation of the sympathetic, and include high blood pressure and inhibition of the gastro-intestinal movements; in the other their effects are referable in part to stimulation of the parasympathetic nerves, and include low blood pressure and active movements of the gastro-intestinal tract.

V. 19

An ideal cathartic should pass through the stomach without disturbing it and exert its action on the intestine without causing pain or inflammation, and these conditions must be approximated in order that a drug may be of any use as an evacuant of the intestine.

We are in need of an evacuant which is suitable for subcutaneous injection, and which will then produce purgation without giving rise to excessive irritation at the point of injection, or irritating the kidneys. None of the agents which we use as cathartics is well adapted for therapeutic use by subcutaneous injection, some being local irritants, others having undesired side actions.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

PAPAVERINE.—$C_{20}H_{21}O_4N$.—An alkaloid obtained from opium, belonging to the benzyl iso-quinoline group (i. e., it is not a morphine derivative).

Actions and Uses.—Pal found that papaverine relaxes smooth muscle in general—although different organs are affected in a varying degree.

Papaverine is most effective in hypertonic conditions, while it does not interfere materially with the normal movements, for instance of the intestines. It is also a rather feeble central analgesic and a local anesthetic. Its toxicity is low, and neither tolerance nor habituation has been reported. These actions have prompted its use, with reported success, in various spasmodic conditions of the smooth muscles. Pal recommends it especially in all kinds of gastric and intestinal spasms (also for the diagnosis of pyloric spasm); in biliary colic; and in bronchial spasm. Of more doubtful value is its employment in pertussis, hyperemesis, and vascular spasm—angina pectoris, acute uremia and eclampsia. It is admitted to be ineffective in chronic hypertonus. The local anesthetic action, with vasodilatation, has been used against rhino-asthma, and to mitigate the pain of irritant injections.

Dosage.—The oral and hypodermic single dose is 0.03 to 0.08 Gm. (½ to 1¼ grains); daily dose to 0.5 Gm. Single doses of even 1 Gm. are said to be non-toxic.

Papaverine occurs in fine, white rhombic prisms or needles or sometimes in scales; odorless and tasteless.

Papaverine is nearly insoluble in cold water; very sparingly soluble in alcohol, ether, chloroform and benzene if cold; somewhat more soluble in these liquids when hot, but deposited by them on cooling; soluble in warm petroleum ether and in acetone.

Papaverine melts at 147 C.

If about 0.01 Gm. of papaverine be dissolved in 10 Cc. of water containing a few drops of diluted hydrochloric acid, and a few drops of potassium ferricyanide solution added, a lemon-yellow precipitate of papaverine ferricyanide should form at once (distinction from *other opium alkaloids*).

If about 0.001 Gm. of papaverine be dissolved in 0.1 Cc. of sulphuric acid containing in each c.c. one drop of formaldehyde solution, a colorless solution, or at most a faintly yellowish-green color, should be produced; this gradually changes to deep rose and finally becomes brown (distinction from *morphine and its esters*, which give purple or violet colors).

If 0.01 Gm. of papaverine be dissolved in 0.2 Cc. of sulphuric acid the solution should not be colored more than very faintly pinkish or brownish (limit of *cryptopine, thebaine or of other organic impurities*).

If 0.01 Gm. of papaverine be dissolved in 10 Cc. of water containing a few drops of hydrochloric acid, a few drops of a saturated aqueous solution of iodic acid added, and the mixture shaken with chloroform, the chloroform layer should not be colored violet (absence of *morphine*).

If from 0.2 to 0.3 Gm. of papaverine be weighed, dissolved in 20 Cc. of warm water containing a few drops of diluted hydrochloric acid, the solution cooled, 1 Cc. of freshly prepared potassium ferricyanide solution added, the mixture agitated, allowed to stand over night, filtered, the filtrate made alkaline with ammonia water, shaken with several successive portions of ether, the ether solutions combined, washed with water, evaporated, the residue dried at 100 C. and weighed, the weight should not amount to more than 2 per cent. of the weight taken (limit of *foreign opium alkaloids*).

PAPAVERINE HYDROCHLORIDE.—Papaverinae Hydrochloridum.—$C_{20}H_{21}O_4N.HCl$.—The hydrochloride of the alkaloid, papaverine, containing not less than 88 per cent. of papaverine.

Actions and Uses.—See papaverine.

Dosage.—See papaverine.

Non-Proprietary Preparations:

Papaverine Hydrochloride, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck & Co., New York).

Papaverine Hydrochloride, Roche.—Manufactured by F. Hoffmann-LaRoche & Co., Basel, Switzerland (Hoffmann-LaRoche Chemical Works, New York City).

Papaverine Hydrochloride, Roche, Tablets.—Each tablet contains papaverine hydrochloride, 0.04 Gm.

Papaverine hydrochloride occurs in a fine white, crystalline powder or in small monoclinic plates or prisms; odorless and having a bitter taste; permanent in the air.

Papaverine hydrochloride is sparingly soluble in water; soluble in alcohol; very soluble in chloroform; insoluble in ether.

An aqueous solution of papaverine hydrochloride has an acid reaction toward litmus paper.

If from 0.2 to 0.3 Gm. of papaverine hydrochloride be weighed, dissolved in 20 Cc. of warm water, the solution cooled, a slight excess of ammonia water added and the mixture shaken with three successive portions of 25 Cc. each of ether, or a sufficient quantity to complete the extraction, the ether solutions combined, washed with water, evaporated to dryness, the residue dried to constant weight at 100 C. and weighed, the weight should indicate not less than 88 per cent. of papaverine. The alkaloid obtained by this process should conform to the tests for identity and purity described under Papaverine.

PAPAVERINE SULPHATE.—Papaverinae Sulphas.—$(C_{20}H_{21}O_4N)_2H_2SO_4$.—The sulphate of the alkaloid, papaverine, containing not less than 85 per cent. of papaverine.

Actions and Uses.—See papaverine.

Dosage.—See papaverine.

Papaverine Sulphate, Roche, Ampules.—Each ampule contains papaverine sulphate solution equivalent to 0.04 Gm. papaverine sulphate. Manufactured by F. Hoffmann-LaRoche & Co., Basel, Switzerland (Hoffmann-LaRoche Chemical Works, New York City).

Papaverine sulphate occurs in white, crystalline powder; odorless and having a bitter taste; slightly hygroscopic.

Papaverine sulphate is soluble in water and in alcohol; very soluble in chloroform; insoluble in ether.

An aqueous solution of papaverine sulphate has an acid reaction toward litmus paper.

If from 0.2 to 0.3 Gm. of papaverine sulphate be weighed, dissolved in 20 Cc. of water, a slight excess of ammonia water added and the mixture shaken with three successive portions of 25 Cc. each of ether, or a sufficient quantity to complete the extraction, the ether solutions combined, washed with water, evaporated to dryness, the residue dried to constant weight at 100 C. and weighed, the weight should indicate not less than 85 per cent. of papaverine. The alkaloid obtained by this process should conform to the tests for identity and purity described under Papaverine.

For a Flyless Town.—The *Bulletin* of the health department of Chicago for April 3 says it is known that 90 per cent. of flies breed in horse manure, and if the manure pile could be gotton rid of the 90 per cent. of flies would vanish and the other 10 per cent. could easily be taken care of. The present ordinance regulating the manure problem would, if enforced, go far toward making Chicago a flyless city. Attempts have been constant to enforce it and over 6,000 notices were given and 1,500 suits were brought last year to abate manure nuisances, many of which suits have not been reached on account of congestion of the courts.

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SATURDAY, MAY 29, 1915

TETANUS CARRIERS

It is thirty years since Nicolaier succeeded in producing tetanic symptoms in animals by inoculating them with soil. The micro-organisms responsible for this result are now known to occur in the superficial layers of the earth's surface. One bacteriologist has reported that soils from thirty-eight cities in different parts of the world were tested by him and that positive evidence of the tetanus bacteria was obtained from all except twelve of the cities. The fact that the soil of cultivated and manured fields seems to harbor the *Bacillus tetani* with especial frequency has been attributed to the probable presence of this germ in the dejecta of some of the domestic animals. Indeed, this is more than a mere supposition, since the bacillus has been found by some to be particularly abundant in the feces of horses. Pizzini[1] even asserted that he had found it in 5 per cent. of the human feces examined; with the added indication that whereas 30 per cent. of the men working about horses and stables have tetanus bacilli in their feces, only 2.2 per cent. of men engaged in other occupations have them.

The tetanus organism is so prominent as a danger to mankind that the problems of its sources and distribution become of the utmost importance. This is intensified by the unusual viability of the spores of this species. Protected from sunlight and other deleterious influences, they may remain virulent for many years. A case has actually been reported in which tetanus was produced with bacilli from a splinter of wood infected eleven years before.[2] The comparative infrequency of tetanus infection in ordinary life does not in any way minimize the wide distribution of the exciting organism in nature.

From observations made in the laboratories of the Sheffield Scientific School of Yale University, Noble[3] has reached the conclusion that the tetanus bacillus appears in the intestines of many normal animals, especially of the herbivora. Apparently it is impossible, with the current technic available, to detect the micro-organism unless it is present in relatively large numbers. Park[4] states that 15 per cent. of horses and calves in the vicinity of New York City harbor tetanus bacilli in their intestines. Noble found that eleven out of sixty-one horses examined, or 18 per cent., showed this organism in their feces. He failed to find them in the excreta of cows; but the investigations on this species were not conclusive, because they were made on a herd of cattle confined in a barn during the winter months when the diet of ensilage was such as to exclude the probability of its containing tetanus spores.

Noble is inclined to the belief that the tetanus bacillus may multiply within the intestines of suitable animals. Some of these seem to offer especially favorable conditions for this growth. Tests on two selected horses showed that the tetanus spores disappeared from the feces of one fourteen days after the beginning of the observations; whereas the other animal harbored them continuously for four months, although, here too, they eventually disappeared. It is highly improbable that this persistence was due to repeated reinfection, because other horses in the same stable showed no signs of fresh invasion by the tetanus bacilli.

If these observations are valid in demonstrating that individual horses may harbor tetanus bacilli in their alimentary tract for many months following an initial infection, the phenomenon would appear to present the case of a "tetanus carrier" comparable with the well-known typhoid carriers and other seemingly healthy disseminators of human infection. How common the "tetanus carriers" may be among horses remains to be ascertained; but, as Noble contends, if we grant their existence, the universal distribution of tetanus spores is not difficult to explain. In any event, the presence of these forms in soils, street dust, fresh vegetables, on the clothing and the skin is easily attributable to fecal contamination, as has so often been maintained.

1. Pizzini: Baumgarten's Jahresb., 1894, xiv, 236.
2. Henrijean: Ann. Soc. méd. chir. de Liége, 1891.
3. Noble, W.: Experimental Study of the Distribution and Habitat of the Tetanus Bacillus, Jour. Infect. Dis., 1915, xvi, 132.
4. Park, W. H.: Pathogenic Bacteria and Protozoa, 1910, p. 232.

MENTAL CHANGES IN EXOPHTHALMIC GOITER

It is well known that the mental condition of patients with exophthalmic goiter is frequently not normal, and that a loss of balance of the nervous and psychic equilibrium is one of the first signs of beginning thyroid intoxication. Since these mental disturbances often become prominent, they have received much attention under the title of the "Basedow psychosis."

Léopold Lévi and Rothschild call the thyroid the "glande de l'émotion," and refer to the mental status of exophthalmic patients as a "hyperthyroid temperament." Homburger believes that exophthalmic goiter and the accompanying mental derangements are related in that they spring from a common ground, there being a neuropsychopathic anlage. In six epileptics suffering with exophthalmic goiter, the influence of

the latter disease on concomitant psychic disturbances was marked. Many other writers refer to a relation between psychoses and exophthalmic goiter.

The most conclusive proof of relationship lies in a parallelism between the two disorders. As the usual symptoms of exophthalmic goiter increase in severity, the psychosis becomes more marked; as the symptoms improve, the psychosis improves, and if the patient recovers entirely from the goiter, the psychosis likewise disappears. In a series of eighty-six cases of exophthalmic goiter collected by Pharon,[1] he holds the goiter responsible for the accompanying psychosis in sixty-seven instances because of this parallelism. Among these cases were many manic-depressive and psychasthenic individuals. Colla[2] found a similar parallelism in a series of goiter cases compiled for an entirely different purpose. He had under observation two patients who, after having had a Basedow neurosis for some time, finally developed an exophthalmic goiter. Star states that we may have a Basedow neurosis without the typical exophthalmic goiter ever developing. The syndrome of such a neurosis is given by Kraepelin as follows: cracking of the voice, tremor of the hands, poor judgment, illusions, hallucinations, mistrust or suspicion, groundless dislikes and jealousy.

Attempts to explain the occurrence of psychic disturbances in disease of the thyroid gland are based on a relationship between the activities of this gland and the central nervous system. Modern investigators believe that exophthalmic goiter is due to an increased activity of the thyroid (Moebius), to a perverted function (Gauthier), or to a combination of the two. It is not unreasonable to suppose that altered thyroid function would have some effect on the nervous tissues. Recently a connection between the thymus and the thyroid has been established in this disease, and during the time of its maximum development, the thymus seems of special importance to the nervous system. In instances of decreased thyroid activity, the hypertrophied or persistent thymus may act in a compensatory manner, and excessive activity on the part of this gland may be as dangerous as hyperactivity of the thyroid. Bainbridge[3] suggests that the mental changes are dependent on nutritional disturbances of the brain, the latter resulting from a perverted secretion or hypersecretion of these glands. Undoubtedly thyroid secretion influences the nutrition of the entire body, but too little is known of the interrelation of the secretions of the ductless glands to allow us to determine in what manner the nervous tissues are affected.

So far as is known, there has been no microscopic examination of brain tissues from patients with exophthalmic goiter and the Basedow psychosis. Ramadier and Marchand, however, have examined the thyroid glands of many insane patients to find if there was any connection between the psychic condition and the parenchyma of the gland. Among the cases studied were acute and chronic dementia, melancholia, dementia praecox, epilepsy, etc. Aside from considerable fluctuation in the weight of the gland, which is also true in normal individuals, there were no gross changes. Microscopically, numerous circumscribed, sclerotic foci or regions of interstitial inflammation were found, but glands from persons who have not suffered with mental or thyroid disease present similar changes. Further, these changes were present in nearly every instance of mental disease, and did not seem to depend on the type or severity of the malady. These investigators could find no relation between changes in the thyroid and mental disease, and conclude that toxins or other injurious substances which are able to affect the brain and cause mental disturbances may at the same time attack the thyroid.

The manner in which the so-called Basedow psychosis is affected by operation has been considered by Bainbridge, who states that surprisingly prompt effects are noted following thyroidectomy, and that a complete recovery may be reasonably expected in all but the severe forms of psychoses. In such cases it is unreasonable to hope that merely removing the causative factor will repair permanent damage already done the nervous centers.

Thus the rather large and varied group of nervous disturbances attendant on exophthalmic goiter may be classed under one head as the Basedow psychosis. The relation between the goiter and the psychosis is clear and well defined, but the factors which produce the mental changes and the structure alterations which occur are not definitely known.

1. Pharon: Neurol. Zentralbl., 1913, No. 3.
2. Colla: Allgemein. Ztschr. f. Psychiat., 1913, lxx, 525.
3. Bainbridge: Med. Press, 1915, xcix, 86.

ENDOWED MEDICAL SCHOOLS

Until the last decade, medical education seemed to have no attraction for the philanthropists. On the contrary, medical schools were considered not only as self-supporting but also as money-making institutions. It is noteworthy, however, that, as the colleges have changed in character during the rapid improvement in medical education in recent years, their financial needs have been met. Especially with the tremendous development of medical education during the past ten or twelve years, there has been a corresponding increase in the number of gifts for endowments, new buildings and support.

These gifts have been so generous for some institutions as to make them equal if not superior in resources to the leading medical schools abroad. Since, in 1906, Harvard Medical School secured its beautiful new buildings, the Peter Bent Brigham Hospital, the Huntington Cancer Hospital, the State Psychopathic and other hospitals have been built in the imme-

diate vicinity and brought into close affiliation, resulting in the development of a great medical center. Johns Hopkins Medical School, with its modest start in 1896, has since been developed by large additions to its endowment, by the increased provision for medical research and the expansion of its hospital, until it, likewise, ranks among the world's great medical schools. There have been marked developments at Pennsylvania and Michigan and, more recently, at Minnesota and Tulane. New medical buildings at less expense but proportionally of equal importance, in recent years, have been erected for the medical schools of the Universities of Georgia, North Carolina and Nebraska and for the Medical College of South Carolina. A beautiful new medical library building has been secured for Leland Stanford, and greatly increased hospital connections, leading to the development of more compact medical teaching plants, have been obtained by Western Reserve University and the University of Cincinnati, as well as by Jefferson, Louisville and Iowa. Vanderbilt has emerged from a long struggle with adversity, has received a liberal endowment and is now undergoing a rapid growth.

Because of the multiplicity and variety of these developments in medical schools, one is inclined to underestimate the importance and magnitude of the recent achievements at St. Louis. The dedication of the new buildings of Washington University Medical School marks the completion of another great medical teaching institution in the United States, of which the whole country may well be proud. With generous endowment, the Barnes and the St. Louis Children's hospitals and this high grade medical school have built splendid new buildings in immediate proximity, the total expense being over three million dollars. Of greater significance, however, is the fact that these institutions have formed a close affiliation by which they can work together to fulfil in the best manner possible a threefold function: (*a*) to furnish the best and most enlightened care of the sick in accordance with modern medical knowledge; (*b*) to add to the positive knowledge regarding the cause, cure and prevention of disease through scientific research, and (*c*) to furnish courses of instruction by which the public will be provided with thoroughly trained physicians and nurses.

In the light of all these remarkable achievements in medical education, it is not surprising that as great, or perhaps greater things are being planned in other parts of the country. These recent accomplishments, therefore, give confident expectation that the plans for a ten million dollar medical center at Columbia University will be successfully worked out. Surely, no development is more worthy of generous support; no investment could bring greater returns in the saving of lives, in the prevention of sickness and distress, and in promoting the welfare of the public.

BACTERIAL VARIATIONS

The question of variation, which has long attracted attention in connection with the biologic study of the most diverse forms of animal and plant life, has at length become a timely topic in bacteriology. The variability of micro-organisms in certain respects has, of course, been known since the days of Pasteur; for it was early realized that within the same species of bacteria, different races or strains may exhibit widely varying degrees of virulence. Such fluctuations have appeared to represent, to a large extent, degrees of adaptation on the part of bacteria to the conditions found in the living body. Not only, furthermore, can infectiousness be enhanced by the passage of micro-organisms through animals of certain species, but the virulence of bacteria can also be attenuated by laboratory manipulation.

The problem of variation in bacteria, however, is something more than one of alterations in the property of infectiousness which may or may not be a biologic attribute of relatively recent acquisition. Professor Jordan[1] of the Department of Hygiene and Bacteriology at the University of Chicago points out that in recent years some confusion has arisen through the difficulty of distinguishing true variations from the development of latent characteristics, and from environmental variation. There are qualities or properties which may be dormant in the organism or cell and are manifested only in response to definite external influences. This Jordan illustrates by the case of certain bacteria which form spores in the presence, but not in the absence, of oxygen. He very properly maintains that the sudden appearance in this way of a definite morphologic character cannot be looked on as an instance of true variation. Such a manifestation is merely an immediate response to changed conditions of life — it is the awakening of a dormant character. The importance of standardizing culture mediums lies in no small measure in the fact that latent qualities often play an important part in bacterial identification, and that it is sometimes impossible to recognize a given organism until it is brought into a peculiar environment and has given an appropriate response.

Although the great majority of bacterial variations that have been described belong to the class of apparently adaptive modifications, it now seems likely that true mutations occur. To fit this category they must fill the requirements of appearing suddenly without intermediate stages, of being irreversible, and of not involving all the cells of the parent strain. Jordan describes a bacterial mutation of this sort exemplified in the sudden acquisition of sucrose-fermenting powers by one of a pure line strain of *Bacillus coli*. Cultures of the parent organism grown in sucrose broth for a series of generations as yet have shown no gas or

1. Jordan, E. O.: Variation in Bacteria, Proc. Nat. Acad. Sc., 1915, i, 160.

acid production. The particular mutation noted, therefore, seems to be due, in the words of Jordan, to the intracellular or molecular changes brought about by nonspecific influences and not to a direct adaptation to particular environmental conditions. All who are interested in questions of bacterial identification will appreciate the significance of such contentions. The distinction between an innate capability for certain types of reaction and a true fundamental mutation is not always easy to discover. In relation to the possible pathogenicity of organisms, this comparatively new domain of research calls for special critique and discriminating reserve of judgment. New micro-organisms are sometimes merely old ones in a new guise.

THE NOMENCLATURE OF DRUGS

The decision of the International Commission on Zoological Nomenclature in regard to the name "ancylostoma" has excited lively interest.[1] This seems somewhat singular in view of the general indifference to the nomenclature of drugs. Perhaps it would be better to say that the apathy of the medical profession toward the deplorably chaotic condition of drug nomenclature is singular and requires explanation. Certainly no irregularity and no innovation in the naming of a parasite can produce the harm and inconvenience that result from the haphazard naming of remedial agents.

The first requisite of successful prescribing is to know what one is giving. If the prescriber has not clearly in mind the exact properties and character of the drug prescribed, he does not know that drug. The mellifluous and meaningless name preferred for its "convenience" to a chemically descriptive name is too often an alias, masking the actual relationships of the substance. Thus, whereas the name "diacetylmorphin" tends to remind the user of the dangerous properties of the drug, the convenient name "heroin" has no such associations; undoubtedly the name has conduced to more reckless employment of this habit-forming preparation. The name "atoxyl" was given to sodium arsanilate presumably to indicate its alleged harmlessness; but the preparation has belied its name by exhibiting decidedly poisonous action. The influence of the name must have been both actively and passively mischievous — actively, so far as it seemed to promise innocuousness, and passively so far as it merely disguised the real nature of the drug.

Since the action of drugs depends on their chemical nature, the names should at least suggest the chemical composition and relationship of the substances (as the name "acetanilid," indicating a compound of acetic acid and anilin) or, at any rate, indicate from what they are derived (as the names "cocain" from coca, and "strophanthin" from strophanthus). The tendency toward names like antipyrin (against fever), diuretin (to promote the urinary flow) and migrainin (for headache)—that is, toward names suggestive of a therapeutic use rather than of the actual properties and character of the drugs—is one to be deplored and discouraged. Such monstrosities as "veronal" (said to commemorate the fact that one of the promoters of the drug thought of this name while passing through Verona) and "stovaine" (a pun on a man's name) are objectionable simply because they give no clue to the real character of the substance.

Then in the case of preparations protected only by trademarked names, the financial side comes in. Hexamethylenamin is quoted under this, its correct name, in a current catalogue at 13 cents an ounce; under the proprietary and therapeutically suggestive names "Uritone," "Urotropin" and "Cystogen," at 35 cents, 60 cents and $1 an ounce, respectively—certainly a high tax for a short name. Theobromin sodium salicylate was for years quoted under its true name at 35 cents an ounce; under the proprietary name "Diuretin," the same substance, not superior in any respect, is quoted at $1.75 an ounce—an increase of 400 per cent. in price for a name!

Why are arbitrary proprietary names accepted so readily, and correct scientific names rejected? Why do some physicians, for instance, stumble over "phenolphthalein," but readily remember the therapeutically suggestive proprietary name "Purgen"? The difference in the number of syllables is not the sole reason, for the five-syllabled name "acetanilid" has become so familiar that even laymen use it freely.

In the first place, the proprietary name is advertised and the scientific name is not. We have adopted the "catchy" names bestowed by manufacturers, not simply because they are short and therapeutically suggestive, but because they are kept before our eyes, forced on our consciousness and stamped on our memories by advertising.

In the second place, in the past every medical student was compelled to learn anatomy and pathology, and was thus enabled to understand the meaning of anatomic and pathologic terms, no matter how many syllables they contained, whereas chemistry and pharmacology were so slighted that most medical students had little, if any understanding, of the principles of chemical terminology. Such students (now physicians) find no difficulty in remembering the anatomic names "supinator radii brevis" because they understand what each component of the term means; but the U. S. P. name "hexa-methylen-amin," so thoroughly understood by the organic chemist, means nothing to them, and consequently they forget it readily. For this they may be pardoned; but they are less pardonable if they try to make their ignorance a reason against the general adoption of a scientific nomenclature. The younger members of the profession,

1. "Ancylostoma, not Ankylostoma," Current Comment, THE JOURNAL A. M. A., March 27, 1915, p. 1081; Correspondence, April 17, 1915, p. 1346.

moreover — those who have graduated from the better class of medical colleges within the last ten years — ought to feel that an admission that they do not understand such chemical terms is discreditable; it means that they have failed to profit as they should have profited from both their preliminary and their medical education. It is time for the profession generally to realize that an anatomy whose nomenclature depended on the inexact terminology of common speech would be no more discreditable and hampering to modern medicine than a pharmaceutical chemistry similarly bereft of scientific nomenclature. We should eschew the fanciful and therapeutically suggestive names provided by manufacturers. For nonpatented substances, let us use the U. S. P. or other nonproprietary names, and for new patented products, let us insist that names at least suggesting the chemical (not the alleged therapeutic) nature of the drug be adopted.

Current Comment

UREA IN HUMAN SPINAL FLUID

One of the criteria which have been offered as an indication of the genesis of special fluids in the body by a process of true secretion, that is, cell function, instead of mere transudation, is the existence of specific constituents in the product. Pepsin is ordinarily not found in the blood or the lymph; and similarly, other individual enzymes are confined to special secretions in the organism. The boundary lines respecting the distribution of enzymes are perhaps not so strictly drawn as they were a few years ago, but distinct limits of occurrence unquestionably exist. So in the case of other chemical substances, their appearance may be limited to a single fluid, as is that of the lactose of milk. The index of secretion is not limited, however, to the qualitative nature of the product. The dynamic factors of its production are also significant. Whether the cerebrospinal fluid is a true secretion or merely a modified tissue space fluid, or lymph, has not been conclusively determined on the basis of the foregoing principles. Some of the existing evidences have already been reviewed.[1] At one time the cerebrospinal fluid was looked on as unique in that it was supposed to be devoid of some of the soluble constituents characteristics of blood and lymph, notably sugar and some of the inorganic components. Little by little, with the increasing use of lumbar puncture, evidence has been furnished for the abundant presence of such substances for which the walls of the cerebrospinal spaces were once supposed to be impermeable. The latest to be added to the list is urea, the widespread distribution of which has been indicated before.[2] At the Hospital of the Rockefeller Institute for Medical Research, Cullen and Ellis have shown that when samples of human blood and spinal fluid are drawn within a few minutes of each other, the differences in the urea content of these two fluids is rarely greater than 2 milligrams per hundred cubic centimeters.[3] The greatest difference observed in thirty-two determinations on fifteen different patients was 11 mg. per hundred c.c. of fluid. The urea values varied from 20 to 42, and from 22 to 46 mg. of urea per hundred c.c. of serum and spinal fluid, respectively. These figures all lie within the possible range of normal variation. The occasional difference between the spinal fluid and the blood serum may be due to the rapid rise and fall of blood urea at different stages of protein digestion. From the nature of the processes of production of the spinal fluid, one might expect the changes in its urea content to lag somewhat behind those of the blood. As Cullen and Ellis remark, the results are in accordance with the already well-founded view[2] that the animal tissues are, in general, osmotically permeable to urea, which therefore tends to reach the same level of concentration in the different body fluids.

1. The Production of Cerebrospinal Fluid, editorial, THE JOURNAL A. M. A., March 28, 1914, p. 1018; The Cerebrospinal Fluid, Nov. 14, 1914, p. 1764; Cushing, Harvey; Weed, L. H., and Wegefarth, P.: Jour. Med. Research, 1914, xxxi, 1.

2. The Distribution of Urea in the Body, editorial, THE JOURNAL A. M. A., Sept. 26, 1915, p. 1115.

3. Cullen, G. E., and Ellis, A. W. M.: The Urea Content of Human Spinal Fluid and Blood, Jour. Biol. Chem., 1915, xx, 511.

PELVIC MEASUREMENTS OF PHILIPPINE WOMEN

There is a traditional belief, supported by statements of scientific observers, that in childbirth among primitive peoples the mothers experience comparatively easy labor. An important, if not dominant factor in bringing about such a result must rest in anatomic conditions, and notably in the relationship in size between the pelvis of the mother and the head of the newly born infant. It has been asserted[4] that the pelvis of the females of less civilized races is narrower than that of the Caucasian race. A study of pelvimetry and cephalometry among Filipinas undertaken by Dr. Honoria Acosta-Sison[5] among patients in the obstetric wards of the Philippine General Hospital at Manila has furnished new data on this subject. It shows, by comparison with standard measurements made in the United States and elsewhere, that the diameters of the Filipino pelvis are shorter than those of the American or European pelvis. The relation of one diameter to another is altered in such a way that the proportion of the crests with the spines in the Filipino pelvis is much smaller than the proportion of the same diameters in the European or American pelvis, and that the proportion of the diagonal conjugate with the other diameters in the Filipino is very slightly larger than in the American. These facts, elicited by measurements of 117 cases, would seem to show that the Filipino pelvis is narrower and relatively deeper than the American pelvis. This diminution may be explained by the smaller stature of the Filipinas. More striking, however, is the observation that despite the smaller pelvis, the trans-

4. Riggs: A Comparative Study of White and Negro Pelves with a Consideration of the Size of the Child and Its Relation to Presentation and Character of Labor in the Two Races, Johns Hopkins Hosp. Rep., 1904, xii, 421.

5. Acosta-Sison, Honoria: Pelvimetry and Cephalometry among Filipinas, Philippine Jour. Sc., Sec. B, 1914, ix, 493.

verse diameter of the pelvic outlet in the Filipinas is the same as that of the Caucasian race. The relative enlargement of the outlet is explained by Acosta-Sison as the outcome of the habitual squatting position that the Filipino assumes, and by the fact that the custom of carrying of children astride the mother's or nurse's hip may also have an effect toward enlargement of the transverse diameter. The cephalic diameters of the Filipino children are smaller than those of Americans, and thus they are proportionate to and compensate for the smaller maternal pelvis.

AMERICAN SANITARY MISSIONARIES

A note from Dr. Samuel T. Darling, mailed at Gibraltar, announces his safe arrival to that point on his journey to Asia. It will be remembered that Dr. Darling was appointed as a member of the International Commission, Rockefeller Foundation, to investigate the cause of anemia in Malay. He has been connected for about ten years with the health administration in Panama — the work which set a standard for the world to follow. It is significant that the men connected with that work are being selected to act as missionaries in carrying to other parts of the world the efficiency of service there displayed. The work of Dr. Darling had already been recognized abroad by an honorary fellowship in the Society of Tropical Medicine and Hygiene of London, and a corresponding membership in the Société de Pathologie Exotique de France, the latter for his discovery of *Trypanosoma hippicum*. The discovery of this organism was followed by a complete investigation, which yielded a method of immunizing against this type of trypanosomiasis of mules, horses and other animals, and the knowledge that the disease was transmitted in corrals by the common house-fly. Dr. Darling accompanied Major-General Gorgas to the Rand and Rhodesia, and took part in the studies made there. The best wishes of his colleagues go with him to his new field of endeavor.

ONCE MORE A WARNING!

There is continually coming to this office evidence of the fact that doctors are still allowing themselves to be swindled by unauthorized solicitors under various representations. Evidence has been received that at least ten physicians have been victimized by these persons during the last six weeks. One active worker calling himself E. B. Huntington carries blanks bearing the name of the National Educational Association, 130 Nassau Street, New York City. As we have intimated before, there is no such association at that address. Two checks bearing the endorsement of this individual have been received this week. In one Huntington inserted his own name, making the check payable to him "or to the American Medical Association" — a pure case of forgery; in the other case the doctor apparently was inveigled into making the check payable to Huntington direct. In the latter case the doctor wrote "for the American Medical Association," evidently supposing that this would protect him. Huntington is not the only man who is traveling over the country working doctors and others. May we suggest that those who would avoid being swindled should not pay money to traveling men whom they do not personally know? Checks should not be made payable to any person, but to the concern the person claims to represent; and even then one should be very sure that there actually is such a concern. Money should not be paid to any one claiming to represent the American Medical Association unless he carries credentials bearing the signature of the Editor and General Manager and the seal of the Association.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Personal.—Dr. William P. Davidson, Sullivan, sustained a fracture of the clavicle by the overturning of his automobile near Danville, May 14.——Dr. Edmund A. Behrendt, Bloomington, who has been ill in St. Joseph's Hospital, is reported to be improving.——Dr. Isaac L. Beatty, Fairview, has been appointed an internal revenue collector and inspector under the Harrison law.——Dr. James A. Boyer, Carmi, injured his arm seriously while cranking his automobile, May 10.

State Medical Society Meeting.—At the sixty-fifth annual meeting of the Illinois State Medical Society held in Springfield, May 18 to 20, the following officers were elected: president, Dr. Charles W. Lillie, East St. Louis; president-elect, Dr. William L. Noble, Chicago; vice-presidents, Drs. Fred S. O'Hara, Springfield, and Henry P. Beirne, Quincy; secretary, Dr. Wilbur H. Gilmore, Mt. Vernon (reelected); and treasurer, Dr. Andrew J. Markley, Belvidere (reelected). The next annual meeting will be held in Champaign in May, 1916.

Lax State Health Laws.—After a three-months investigation of health conditions in Illinois by Surg. Samuel B. Grubbs, U. S. P. H. S., the Illinois State Board of Health, health laws of the state and the attitude of the people of Illinois toward the betterment of conditions are criticized severely. Recommendations are made that the State Department of Health should be reorganized by establishing the following divisions: communicable diseases, sanitation, vital statistics, publicity and education and examination, registration and accounts. The state, outside of Chicago, should be divided into at least eight districts with an inspector in each; a sanitary engineer should be named; births and deaths should be registered; the board should be notified of certain diseases, and vaccination should be required as a prerequisite to school attendance; occupational diseases should be studied; factories should be inspected, and communicable diseases should be placed under a stricter control. The practice of licensing itinerant medicine venders is vigorously condemned. The recommendation is made that the State Board of Health should be given supervision over the entire system of dairy inspections and, in conclusion, a vigorous campaign of sanitary education for the people of the state is urged.

Chicago

New Psychopathic Hospital.—Drs. Harold N. Moyer, Hugh T. Patrick and Sydney Kuh have been appointed a committee to investigate the new Psychopathic Hospital and to make recommendations for its utilization. The county board will then be asked to make the necessary appropriation for carrying on the work.

Play and Recreation.—On May 19 a special meeting of the City Club was devoted to a discussion of play and recreation in Chicago, and a special exhibit of Chicago's school parks and properties was held. Papers were read by the mayor, members of the park commission, principals of the schools, and several invited authorities on playground subjects.

Personal.—Dr. Wallace K. Harrison has been elected a director of the Western Unitarian Conference.——It is

announced that Mayor Thompson has decided to retain Dr. Theodore B. Sachs at the head of the Municipal Tuberculosis Sanatorium.——Dr. and Mrs. Anders Doe celebrated their silver wedding anniversary May 17.——Dr. Julius Gottlieb is reported to be seriously ill with pneumonia.——Dr. Robert L. I. Smith has arrived in Bordeaux on the Steamer *Espagne*. ——Dr. James W. Walker has been placed in charge of a military hospital in London and will sail for England in a few days.——Dr. R. C. Crumpton, for the past year connected with St. Luke's Hospital, has removed to Webster City, Iowa.

The Chicago Unit for Service Abroad.—The following physicians have already volunteered for service in the field hospital organization under the charge of Dr. James M. Neff, chief of staff: Drs. Philip S. Chancellor, Earl P. Ball, Robert B. Acker, Elbert L. Cavenee, Philip M. Dale, Joseph J. Hilton, R. B. Haven, A. H. Hixon, Frederick C. Jacobs, Daniel F. Hayes, John G. O'Malley, Charles A. Maghy, William A. McGuire, C. R. Stanley, S. Walker, George G. Davis, G. E. Meyer, and the following out-of-town physicians have volunteered, Drs. John S. Fox, Silverton, Colo.; Lee Edgar and Waldo Richardson, Seattle, Wash.; R. D. Long and J. K. McLean, Oklahoma City; C. S. Smith, Kalispell, Mont.; S. Terrall, Dallas, Tex.; J. R. Taylor, Madison, Wis.; W. J. Uppendahl, Peoria, Ill.; R. L. Thompson, St. Louis, and George P. Gill, Rockford. Headquarters of the Chicago unit have been established at rooms 237-238 Monadnock Building, and are open from 2 to 6 each day.

MARYLAND

Honor to Councilman.—A banquet was given May 13, by his former students and friends, in honor of Dr. William T. Councilman, formerly of the medical faculty of Johns Hopkins and now of Harvard Medical School. At the banquet a portrait of Professor Councilman was presented to him. The presentation address was made by Dr. Charles W. Mitchell, Baltimore, and Dr. William S. Thayer acted as toastmaster.

Special Medical Department Established.—Dr. Winford H. Smith, Baltimore, superintendent of Johns Hopkins Hospital, announces that a gift of $16,500, to be paid in three yearly installments, has been made by John D. Rockefeller, Jr., to be used for a special medical department at the hospital, to be established in September for the treatment of contagious diseases, with special reference to syphilis. The money is donated through the Rockefeller Bureau of Social Hygiene. The work of the clinic will be in charge of a committee consisting of Drs. George Walker, Theodore C. Janeway and Smith, and the dispensary will be in charge of Dr. Albert Keidel, Baltimore.

Personal.—Dr. Roscoe W. Hall has succeeded Dr. David K. Henderson as resident physician of the Phipps Clinic of Johns Hopkins Hospital. Dr. Henderson has been appointed superintendent of the Royal Asylum of Scotland, Glasgow, and will assume his new duties about June 1. He sailed for Glasgow May 15. Dr. Charles B. Thompson, Baltimore, has been appointed first assistant resident physician at the Phipps Clinic.——Dr. Walter L. Nicholls, Baltimore, underwent operation at Mercy Hospital, May 13, and is reported to be doing well.——Dr. Paul M. Stewart, U. S. P. H. S., has been assigned to take charge of the branch office in Baltimore during the absence of Surg. James A. Nydegger, Baltimore, who sailed for Europe recently to study medical conditions abroad.——Senior Surg. Henry R. Carter, superintendent of the United States Marine Hospital, Baltimore, and government sanitary expert, is recovering from a slight operation. He leaves shortly for the South where he will engage in sanitation work in the malaria districts of Alabama, Georgia and other Southern states for the next three months. During Dr. Carter's absence, Surg. Charles W. Vogel will be in charge of the hospital.

NEBRASKA

State Board Changes.—Governor Moorhead on May 20 appointed Dr. Lucien Stark, Hartington, secretary of the State Board of Health, succeeding Dr. Porter F. Dodson, Wilber, removed.

Correction.—In THE JOURNAL for May 22, it was announced that the state hospital building to be erected on the campus of College of Medicine of the University of Nebraska, Omaha, would cost with equipment, $50,000. The state legislature has appropriated $50,000 for the erection of the building and the equipment is not included in this sum. The hospital is to be a teaching hospital for the University of Nebraska, under the control of the board of regents, and is to receive indigent patients from the entire state.

State Association Meeting.—At the forty-seventh annual meeting of the Nebraska State Medical Association held in Hastings, May 18 to 20, under the presidency of Dr. John P. Gilligan, O'Neill, the following officers were elected: president, Dr. Edward W. Rowe, Lincoln; vice-presidents, Drs. Arthur C. Stokes, Omaha, and James V. Beghtol, Hastings; secretary, Dr. Joseph M. Aikin, Omaha (reelected); treasurer, Dr. Alexander S. von Mansfelde, Ashland (reelected); librarian, Dr. William P. Wherry, Omaha; delegates to the American Medical Association, Drs. Albert R. Mitchell and Artemas I. Mackinnon, Lincoln; alternates, Drs. Francis A. Long, Madison, and Burton W. Christie, Omaha; councilors, first district, Dr. B. Potts, Omaha; second district, Dr. Henry J. Lehnhoff, Lincoln; third district, Dr. Ira H. Dillon, Auburn; fourth district, Dr. Lucien Stark, Hartington; fifth district, Dr. Robert C. Byers, Nickerson; sixth district, Dr. John C. Malster, Stromsburg; seventh district, Dr. Wesley L. Curtis, Fairburg; eighth district, Dr. Patrick J. Flynn, O'Neill; ninth district, Dr. Miles S. Moore, Gothenburg; tenth district, Dr. Claude B. Calbreath, Hastings; eleventh district, Dr. Axel E. Hedlund, Dalton, and twelfth district, Dr. Alfred J. Stewart, Mitchell. The next meeting of the association will be held in Omaha.

NEW YORK

Tuberculosis Ward for Penitentiary.—In the Clifton prison there are said to be 407 convicts suffering from tuberculosis while there are only eighteen beds for tuberculosis patients. For this reason the governor has approved an appropriation for $75,000 for the erection of a general hospital containing a tuberculosis ward.

Reunion of University.—The fortieth annual reunion of the Alumni Association of the Medical Department of the University of Buffalo will be held in Buffalo June 1 to 4. On the first day there will be class reunions of the classes graduated five years and multiples of five years ago, and luncheons. On the second and third days, there will be scientific sessions and the annual business meeting. On Thursday evening, the alumni banquet will be held and on Friday morning, the graduating exercises will be held at the Teck Theater.

Fines for Quacks.—Of the 53 persons arrested several weeks ago in a campaign started by the district attorney, the police and the Medical Society of the County of New York against alleged fake medical museums, 23 were arraigned in special sessions on May 21. Six of the defendants were fined amounts ranging from $500 to $150. The others, who were merely employes, were released on suspended sentences. The defendants agreed to vacate the premises they had been occupying, not to advertise, to destroy exhibits in the museums, and not to permit unlicensed men to represent themselves as physicians.

Will Not Cut State Hospital Appropriations.—Governor Whitman announces that he will not veto the request for about $1,250,000 in the supply and construction bills of the state hospitals. Dr. William Mabon, superintendent of the Manhattan State Hospital and ex-state health commissioner, recently appeared before the governor and showed why this large appropriation was required. His data shows that the average overcrowding in the state hospitals is 22 per cent. and the overcrowding in the Manhattan State Hospital is 30 per cent. There are at present 1,400 more inmates than are provided for by the capacity of the buildings.

Rochester Has Clean-Up Week.—The Public Health Committee of the Rochester Chamber of Commerce had a "clean-up week," beginning May 16. Thirteen teams were appointed for the purpose of inspecting the city conditions, each team consisting of one member of the public health committee, one member of the fire prevention committee, and one uniformed fireman. A circular listing all known methods of getting rid of rats, mice, flies and mosquitoes was prepared by the committee. In addition, 15,000 clean-up "ticklers," indicating numerous specific localities that might profitably be inspected, were distributed in the schools and the children were asked to examine their own homes and surroundings and record the conditions that should be remedied and what they have done to improve them.

Vaccination Campaign.—Under the title "The Mutilated Vaccination Law" a writer in the *Bulletin* of the Health Department discusses the menace in the amendment of the vaccination law which does not make vaccination compulsory for school children excepting in cities of the first and second class, "unless smallpox exists in any other city or school district or in the vicinity thereof and the state commissioner of health shall certify in writing to the school authorities" that smallpox exists. Under this law the school children of the

city will be protected in a fairly satisfactory degree, but the adult population with its immense quota of immigrants and visitors is by no means protected. A vigorous campaign for the protection of the adult population will be conducted.

New York City

Guarding Against Typhus.—Owing to the reported prevalence of typhus fever at Greek ports, eighty-two steerage passengers who arrived on the Steamer *Patris,* May 16, were held at quarantine for observation.

Arbuckle Memorial Building Opened.—The Arbuckle Memorial, completing the north wing of the Long Island College Hospital, Brooklyn, was opened May 24. The wing is five stories in height, 210 by 34 feet, and cost $250,000. It was presented to the hospital in memory of the late John Arbuckle by two of his sisters. The new building will house 171 male patients and, besides the wards and private rooms, it contains a clinical laboratory for 45 medical students and three research laboratories. The addition of this wing completes the physical plant of Long Island College Hospital, valued at two million dollars. The institution now has seven buildings devoted to the education of medical students and to the care of the sick, with accommodation for nearly 500 patients.

Personal.—The degree of Doctor of Laws was conferred on Dr. Simon Flexner by Johns Hopkins University on May 20.——Dr. Lucien P. Brown, state food and drug commissioner of Tennessee, has been appointed director of the bureau of food inspection in the Department of Health at a salary of $5,000 per annum.——Dr. and Mrs. George Paul have sailed for Liverpool on the *St. Paul.*——Dr. Robert T. Irvine, Ossining, was seriously injured by the overturning of his automobile near Ossining, May 15.——Dr. Benjamin Schwartz has been appointed to fill the vacancy in coroner's physicians caused by the resignation of Dr. Otto H. Schultze.——A dinner was tendered to Dr. A. L. Wolbarst on May 12 by the physicians who had attended his genito-urinary clinics at the West Side German Dispensary and Hospital, during the winter session.

NORTH DAKOTA

Hospital to Be Built.—The commissioners of Mercer County have accepted the proposition of the citizens of Hazen to erect a county hospital at that place to cost about $10,000. The citizens of Hazen will erect the building and install the heating and lighting plant, and the county will furnish and maintain the institution until it becomes self-supporting.

State Association Meeting.—At the twenty-eighth annual meeting of the North Dakota State Medical Association held in Bismarck, May 11 to 13, under the presidency of Dr. R. Hudson Beek, Lakota, the following officers were elected: president, Dr. Victor H. Stickney, Dickinson; vice-presidents, Drs. Victor J. LaRose, Bismarck; George M. Williamson, Grand Forks, and Edgar A. Pray, Valley City; secretary, Dr. Hezekiah J. Rowe, Casselton (reelected); treasurer, Dr. William F. Sihler, Devils Lake; councilors, Drs. Allan L. Nicholson, Max; William P. Baldwin, Casselton; Gustave Golseth, Jamestown, and Charles MacLachlan, New Rockford; delegate to American Medical Association, Dr. Charles S. Crane, Grand Forks; alternate, Dr. James P. Aylen, Fargo.

The association recommended for the State Medical Examining Board, the names of Drs. Hugo O. Altnow, Mandan; B. Lyle Meigs, Edgerley, and Henry G. Woutat, Grand Forks. Devils Lake was selected as the next place of meeting.

PENNSYLVANIA

Jefferson Alumni Meeting.—More than seventy-five graduates of Jefferson Medical College and members of the southern chapter of the Jefferson Alumni Association met in York, May 13, and elected Dr. Martin L. Wolford, Harrisburg, president, and Dr. J. Harvey Miller, York, secretary-treasurer. Harrisburg was selected as the place for the all-day clinic and meeting next year.

Summer Course in Anatomy.—The department of anatomy of the school of medicine of the University of Pittsburgh, announces that it will give six summer courses in anatomy this year, from July 5 to August 28, inclusive. These courses are in gross anatomy; cytology, histology and splanchnology; hematology; embryology; neurology, and anatomy of the eye, ear, nose and throat.

Antivivisectionists Lose Again.—An attempt made in the house, May 18, to destroy the effect of the Gerberich bill, which allows vivisection of animals in the interests of science, was voted down, 75 to 50. The bill has passed the senate and is now on third reading in the house. The bill provides for the sale, distribution and use "for the promotion of biological science and for the discovery of new methods of treatment in medicine and surgery" of unclaimed animals in the public pounds. The amendment offered today provided that the bill should apply to animals "except dogs and cats." As this practically would have destroyed the purpose of the measure, it was voted down.

Personal.—Dr. Samuel A. Silk, for the last two and one-half years a member of the staff of the Pennsylvania State Sanatorium, Mt. Alto, has resigned to take up private practice in Sharon.——Dr. Robert Kilduffe, Jr., has been elected director of the pathological department of the Chester Hospital.——Dr. Henry J. Lacier, Bethlehem, underwent surgical operation at Johns Hopkins Hospital, May 6.——Dr. Charles H. Smith has been elected a member of the medical staff of the York Hospital.——Dr. Thomas C. Detwiler, Lancaster, sustained a comminuted fracture of the leg and other severe injuries by the overturning of his automobile near Lancaster, April 30.

Dixon Reappointed.—Dr. Samuel G. Dixon, Philadelphia, whose renomination as state commissioner of health was sent to the senate by the governor, May 17, was confirmed by that body, May 18. This is the third reappointment of Dr. Dixon to this responsible position and he has completed nearly ten years of valuable service to the commonwealth in this position. Under his direction the department of health has attained high rank among the public organizations of the country and its activities have reached all sections of the state. In the campaign against tuberculosis, 115 tuberculosis dispensaries have been established and three state sanatoriums have been constructed under Dr. Dixon's supervision. Since he assumed charge of the health department, the death rate from typhoid fever has decreased more than 75 per cent.

Philadelphia

Hospital Opened.—The new home of the Babies' Hospital of Philadelphia, Manoa Road near Llanerch, was formally opened May 15.

Rodman Honored.—The annual social evening of the West Branch of the Philadelphia County Medical Society was held at the Hotel Marlyn, May 17, and Dr. William L. Rodman was the guest of honor.

Personal.—Dr. Simon Wendcos has been elected a director of the Hebrew Literary Society.——Dr. William H. E. Wehner has been appointed medical director of the Fidelity Mutual Life Insurance Company, succeeding Dr. William H. King, resigned.

Municipal Courts New Clinic.—A clinic for inebriates has been introduced by the chief probation officer of the Domestic Relations Court, under which men addicted to drink and brought before the court or complained of by their wives, can undergo medical treatment. Dr. John Wanamaker, third city police surgeon, has volunteered his services.

Commencement.—The sixty-fifth anniversary and annual commencement exercises of the Woman's Medical College of Pennsylvania will be held Wednesday, June 2, at the Garrick Theater. The alumni conference of the college will be held June 4 and 5. Among the speakers at the commencement exercises will be Dr. Richard C. Cabot of Harvard University, the originator of social service work in connection with hospitals.

Philadelphia Contingent for Paris.—The Philadelphia contingent for service in the American Ambulance Hospital at Neuve will sail for Europe, June 12. Dr. J. William White will be executive head of the expedition; Dr. James P. Hutchinson, surgeon; Dr. Daniel J. McCarthy, neurologist; Drs. Edmund B. Piper, Walter Estell Lee, Arthur E. Billings and Peter McCall Keating, assistant surgeons, and Dr. Samuel Goldschmidt, bacteriologist. Four nurses will also accompany the party.

Doctors Volunteer for War.—The names of six physicians who have volunteered for the medical unit of thirty doctors now being raised by William Potter, former minister to Italy, for war medical service in France, have been made public. Those accepted are, Drs. John F. McCloskey, Frank C. Abbott, John A. Murray, Patton, Pa.; LeSieur Weir, Philadelphia; Edward L. Moore, Statesboro, Ga., and Alvin M. Struse, Roxborough. Dr. Charles E. de M. Sajous has made a conditional offer to join the unit, provided the situation between the United States and Germany does not become acute and war threaten.

Jewish Hospital's Semicentennial.—The fiftieth anniversary of the Jewish Hospital, which really occurred February 15 last, will be observed with impressive ceremonies on Memorial Day, when Governor Brumbaugh and other prominent men will take part in the exercises. Since the opening, fifty years ago, 33,248 patients have been treated in the hospital, 1,259 in the Lucien Moss Home, 3,300 in the Guggenheim annex, and nearly 164,000 in the dispensary. The cost of maintenance in 1865 was less than $5,000, while during the last year it was more than $149,000. In 1865 there was but one medical assistant, while at present there is a chief resident, with six assistants, and eighty-eight consulting physicians and surgeons.

Clean-Up Week.—So as to carry clean-up week into slum homes in the foreign section of the city, a group of women physicians from the Woman's Medical College has carried on an active campaign of sanitation, the out-patient department of the college being used for headquarters. The foreign settlement in the neighborhood was divided into sections to each of which a physician and one or more nurses was appointed. These started an energetic house-to-house canvass, urging the householders to clean and air their homes; disinfect sinks and drains and to clean up alleys and yards, etc. The committee in charge of this work consisted of Dr. Alice W. Tallant, chairman, and Drs. Theodore LeBoutillier, Ellen C. Potter, Leo H. Bernd, Katherine Radley, Helen H. Taylor and Jennie Severine.

CANADA

Health Inspector Killed.—Among the list of the killed in action, May 11, appears the name of Private Joseph H. Jones, formerly health inspector for the municipality of Assiniboia.

Public Hygiene Instruction.—The first class in public hygiene instruction under the direction of St. John's Ambulance Association was held May 10 in Saskatoon. Dr. John A. Valens was the lecturer of the evening.

Meeting Cancelled.—The annual meeting of the Canadian Association for the Prevention of Tuberculosis, which was to have been held in Vancouver at the same time as the Canadian Medical Association, has been cancelled until after the war.

Fraternity Cemented.—The council of the College of Physicians and Surgeons of Manitoba has been successful in its negotiations with Great Britain for reciprocity and now it is announced that graduates of the Manitoba Medical College may practice anywhere in the British dominions without further examination.

War Notes.—Capt. David Smith, M.D., Stratford, Ont., has been appointed to command the field hospital of the Thirty-Third and Thirty-Fourth Overseas Battalions at London Concentration Camp.——Vancouver, B. C., has offered to equip a general hospital of 1,040 beds for service abroad. It is to consist of 35 surgeons, 75 nurses and 200 men.——A Western contingent of the Canadian Army Medical Corps left Halifax, N. S., early in April. It comprised detachments from Victoria, Vancouver, Edmonton, Calgary and Winnipeg. ——Dr. Neiley, New Glasgow, N. S., is serving with one of the hospitals in France.——Dr. Charles M. Burroughs, Sudbury, Ont., has enlisted for service in the Army Medical Corps.——Dr. Howard Ferguson, Toronto, is serving as surgeon on one of the English Channel transports.——Drs. Robert H. Smith, Wickware and William M. Brown, Moose Jaw, Sask., have received appointments in the Royal Army Medical Corps.——Dr. William R. Mason, Parry Sound, Ont., has volunteered for service with the St. John's Ambulance Corps in France.——Dr. Andrew Croll, Saskatoon, Sask., has left for hospital service, probably in Havre, France.——Major David A. Clark, Toronto, was among the wounded at Langemarck.——The divisional officers of the second Canadian contingent have been named. Lieut.-Col. John Taylor Fotheringham, Toronto, is named assistant director of medical services, and Major Jacques, Ottawa, deputy assistant director of medical services.——Dr. Herbert A. Bruce, Toronto, tendered a goodby reception to the Toronto University Base Hospital on the afternoon of May 13. Lieutenant-Colonel Roberts was present with his staff, and some eighty nurses. The hospital required $30,000 for equipment. They obtained some $80,000, the Fulford estate, Brockville, Ont., contributing $40,000. In addition a woman of Cleveland, Ohio, donated a handsome limousine for convalescent soldiers.——Lambton County (Ont.) medical men offer to furnish a general hospital of 200 beds for the use of the Canadian militia in France.

Personal.—Dr. Reginald de Lothbiniere-Harwood, Edmonton, Alta., has been gazetted lieutenant-colonel and placed in command of the Fifty-First Battalion and has volunteered for overseas service.——Dr. Angus W. McPherson, medical officer of health of Peterboro, who left to join the army medical service May 10, was presented on the evening before with a silver tea service on behalf of the various civic bodies of Peterboro.——Dr. F. F. Wesbrook, president of the University of British Columbia, was entertained in Minneapolis, May 8, while on his way from the East to Vancouver.——Dr. Alexander Fisher, Calgary, Alta., has been appointed superintendent of the Calgary hospitals.——On April 30, Drs. J. J. Field and Warren A. Dakin, Regina, who have been appointed to the Royal Army Medical Corps, were given a banquet by the medical fraternity of the city.——Dr. H. V. Robinson, for three and one-half years a member of the medical staff of the Protestant Hospital for the Insane, Verdun, Que., resigned to accept a position in Montreal.——Dr. Darius A. Coon, Elgin, Ont., has been appointed superintendent of the General Hospital, Kingston, Ont., in succession to Dr. Harry A. Boyce, resigned.——Dr. John P. Sinclair has been appointed medical officer of health of Gananoque, Ont.——Dr. John W. S. McCullough, chief medical officer of Ontario, has been appointed assistant sanitary expert to the International Waterways Commission.——Dr. John D. Courtnay, Ottawa, has been appointed a special member of the Canadian medical force at the front to look after wounds and diseases affecting the eyes, ears, noses and throats of soldiers.——During the absence abroad of the editor, Dr. Andrew Macphail, Montreal, and the general secretary, Dr. William W. Francis, Montreal, the Canadian Medical Association and its *Journal* will be conducted by Drs. George Gordon Campbell and John W. Scane, Montreal. The former for many years edited the *Montreal Medical Journal*, and the latter is registrar of the medical department of McGill University.——President Falconer of the University of Toronto and Prof. Irving Howard Cameron deny that the latter has tendered his resignation. Mr. Cameron has announced that after his long service, he is contemplating resigning.——Dr. John L. Chabot, M. P., for the city of Ottawa, was a passenger on the torpedoed *Lusitania*, and so far no report has been received of his survival.——Major Thomas Bedford Richardson, Toronto, who has recovered from a prolonged illness dating from September last, has taken up his military duties and has been placed in charge of the hospital at Exhibition Camp, Toronto. ——Dr. W. J. Gibson, Belleville, Ont., is said to be seriously ill.——Dr. William Gunn, Clinton, Ont., has gone on a trip to the Panama-Pacific Exposition.

GENERAL

Climatologists to Meet.—The American Climatological and Clinical Association will hold its thirty-second annual meeting in San Francisco, June 18 and 19, under the presidency of Dr. Henry Sewall, Denver.

Federation Moves.—The Scientific Temperance Federation announces the removal of its headquarters and library and also the editorial department of the *Scientific Temperance Journal*, to 36 Bromfield Street, Boston, Mass.

Tuberculosis Foes to Meet in Seattle.—The annual meeting of the National Association for the Study and Prevention of Tuberculosis will be held in Seattle, June 14 to 16. Thus far, twenty-one states and the province of British Columbia have signified their intention of sending delegates.

Mid-West Specialists Hold Meeting.—The Mid-West Academy of Ophthalmology and Oto-Laryngology held its first semi-annual meeting in Joplin, Mo., May 24, under the presidency of Dr. John D. Pifer, Joplin. President and Mrs. Pifer entertained the members at dinner in the evening of May 24.

American Gastro-Enterological Association.—At the executive session, the following officers were elected for the ensuing year: president, Dr. Charles G. Stockton, Buffalo; first vice-president, Dr. William J. Mayo, Rochester, Minn.; second vice-president, Dr. Ludwig W. Kast, New York City; secretary and treasurer, Dr. Franklin W. White, Boston.

New Officers for Neurologists.—At the annual meeting of the American Neurological Association held in New York City, May 13 to 15, the following officers were elected: president, Dr. Llewellys F. Barker, Baltimore; vice-presidents, Drs. Herman H. Hoppe, Cincinnati, and John J. Thomas, Boston, and secretary-treasurer, Dr. Alfred Reginald Allen, Philadelphia.

Immunologists Hold Meeting.—The second annual meeting of the American Association of Immunologists was held in the New Willard Hotel, May 10, and the following officers were elected: president, Dr. James W. Jobling, Nashville,

Tenn.; vice-president, Dr. George P. Sanborn, Boston; secretary, Dr. Martin J. Synnott, Montclair, N. J.; and councilor, Dr. John A. Kolmer, Philadelphia.

Medical Milk Commissions to Meet.—The ninth annual conference of the American Association of Medical Milk Commissions will be held in San Francisco, June 17 to 19, under the presidency of Dr. Thomas C. McCleave, Berkeley, Cal. The headquarters will be at the Hotel Bellevue and the sessions will be held in the Municipal Auditorium, San Francisco, and the University of California, Berkeley.

Examination of Dentists for Army.—The Surgeon-General of the Army announces that examinations for the appointment of twelve acting dental surgeons will be held at Fort Slocum, N. Y.; Columbus Barracks, Ohio; Jefferson Barracks, Mo.; Fort Logan, Colo, and Fort McDowell, Calif., Oct. 18, 1915. Before October 4, application blanks and full information can be procured by addressing the "Surgeon-General, U. S. Army, Washington, D. C."

Canal Zone Personal.—Dr. Alfred G. Farmer, Gatun, who has been in the service of the Panama Canal since August, 1905, has resigned, to take effect May 31, and will return with his family to the United States. Dr. Farmer has served in both the Ancon and Colon hospitals, as district physician at Corozal and Gatun, and during the last year has been chief of the medical service of the Colon Hospital.——Dr. Edward P. Beverly has reentered the Canal service and has been assigned to duty as chief of the medical service of the Colon Hospital.

Southern Sociologists Hold Meeting.—At the annual meeting of the Southern Sociologic Congress in Houston, May 10, Dr. Oscar Dowling, New Orleans, was elected first vice-president, and Dr. J. W. Dillard, Lynchburg, Va., a member of the executive committee; and the following committee on medical profession and health was selected: chairman, Dr. Watson S. Rankin, Sanatorium, N. C.; secretary, Dr. Lewis B. McBrayer, Asheville, N. C.; and Dr. Powhatan S. Schenck, Norfolk, Va.; Surgeon Rudolph H. Von Ezdorf, U. S. P. H. S., New Orleans; Dr. Khleber H. Beall, Fort Worth, Tex.; Dr. Charles W. Garrison, Little Rock, Ark., and Miss Mary Gearing, Austin, Tex.

Medico-Psychological Association Annual Election.—The seventy-first annual meeting of the American Medico-Psychological Association was held in Old Point Comfort, Va., May 11 and 12, under the presidency of Dr. Samuel E. Smith, East Haven, Ind. The following officers were elected: president, Dr. Edward N. Brush, Towson, Md.; vice-president, Dr. Charles G. Wagner, Binghamton, N. Y.; secretary-treasurer, Dr. Henry C. Eyman, Massillon, Ohio, and executive council, Drs. Samuel E. Smith, East Haven, Ind.; Charles P. Bancroft, Concord, N. H.; Arthur P. Herring, Baltimore, and James M. Forster, Toronto, Ont. New Orleans was selected as the next place of meeting.

Internists Elect Officers.—The annual meeting of the Association of American Physicians was held in Washington, D. C., May 11 to 13, and the following officers were elected: president, Dr. Henry Sewall, Denver, Colo.; vice-president, Dr. George Dock, St. Louis; secretary, Dr. George M. Kober, Washington, D. C.; recorder, Dr. Thomas McRae; treasurer, Dr. J. P. Crozer Griffith, Philadelphia; member of the executive committee of the Congress of American Physicians and Surgeons, Dr. Theodore C. Janeway, Baltimore; and alternate representative, Dr. Richard P. Strong, Boston. The thirtieth anniversary dinner of the Association was held May 12, at which Dr. George M. Kober presided.

Pennsylvania Optometry Bill Vetoed.—The Pennsylvania Legislature recently passed a bill providing for a separate board of examiners for "optometrists" which Governor Brumbough promptly vetoed. In his veto message the governor said: "This board is created in a way that is contrary to all precedent. To limit the executive in his appointments to a professional body to whom is entrusted the conservation of human vision by compelling and directing him to appoint only those selected by the executive committee of a society that has no obligation or responsibility to the people, and a society whose members are in no legal way related to the people at large is contrary to the policy of law. Only members of said society would be eligible to place on the board, notwithstanding the fact that there may now be and in the future there may arise other societies whose functions it is or may be with equal competence to administer to the human eye. In the formation of other state boards the executive is not so limited and no reason has been given me why this limitation should be made. The judgment and the discretion of the executive cannot be delegated to legally irresponsible bodies. This restriction is fundamentally wrong.

"There is no convincing reason why those practitioners should not voluntarily place themselves under the existing licensing body of the commonwealth. . . . The standards of professional service in this commonwealth are and have been high. We are a center of professional services of the most commendable standards. These standards must be safeguarded and exalted. No official act of the commonwealth should in any way lessen the standards of admission to a professional career in this commonwealth nor the standards of professional training to fit for technical service. The human eye is priceless. The care and treatment is a sacred service. The sanction of the state, which is the sanction of the people, cannot be lightly bestowed."

Bequests and Donations.—The following bequests and donations have recently been announced:

St. Luke's Hospital, New York City, $3,000 for a bed for the use of Grace Church, by the will of Miss Adelaide Hamilton.

St. Francis' and St. Mark's hospitals, New York City, each $500 by the will of Xavier Steultzle.

American Theatrical Hospital, Chicago, $7,000, the proceeds of a benefit performance, May 9.

Harvard Medical School, $10,000 for the endowment of a scholarship; Instructive District Nurses Association, Boston, $24,000, to support a nurse under the direction of the Boston Lying-In Hospital by the will of Fannie Bartlett, Boston.

Seton Hospital for Consumptives, New York City, $26,787, Service for the Relief of Incurable Cancer; St. Agnes' Hospital and Misericordia Hospital, each $5,000 by the will of Catherine Reilly, New York City.

Presbyterian Hospital, New York City, one-half of the residuary estate of $137,244, on the death of his wife, by the will of Frederic Baker, New York.

Hospital of the Protestant Episcopal Church, Philadelphia, $10,000; Pennsylvania Hospital, $5,000; Protestant Episcopal Home for Consumptives, $5,000; Christ's Church Hospital, Philadelphia, $10,000, on the death of her sister-in-law, by the will of Sally Robert Smith.

University Hospital, Philadelphia, $5,000, for the endowment of a free bed to be known as the Dr. John Neill bed in memory of her father, by the will of Patty D. Neill.

Home for Crippled Children, $2,000, by the will of Emma Paul.

St. Louis University School of Medicine, the estate of James Campbell, valued at from $6,000,000 to $10,000,000, subject to the life tenure of his wife and daughter.

Miami Valley and St. Elizabeth's hospitals, Dayton, Ohio, each $5,000, for the establishment of free clinics for those suffering from ailments of the eye, ear, nose and throat, by the will of Mrs. Mary B. Greene.

Johns Hopkins Hospital, Baltimore, $16,500, for the establishment of a new department for the treatment of contagious diseases, donation from John D. Rockefeller, Jr.

Presbyterian Hospital, Manhattan, $20,000; St. Vincent's Hospital, Manhattan, $10,000; Hospital Guild of the New York Medical Hospital and College, Manhattan, $10,000; Bellevue Hospital, Manhattan, $10,000; New York Ophthalmic Institute, Manhattan, by the will of William Washington Cole.

Miami Valley Hospital, Dayton, Ohio, $1,000, by the will of Dr. Colby.

Indiana University, Bloomington, a donation of $100,000, to be used in scientific research, from Dr. Luther D. Waterman, Indianapolis.

FOREIGN

Place de Curie.—The name of Curie, in honor of the discoverer of radium, has been given to a small park formed by the tearing down of the old rue Dauphine in Paris.

Edinger's Sixtieth Birthday.—A number of German and foreign neurologic journals dedicated their current issue to Professor Edinger of Frankfurt in honor of his sixtieth birthday, April 13. Several articles, also, in nonspecialist medical journals are being dedicated to him.

Vaccination Required of Matriculants.—Some of the universities and colleges in Austria are now requiring of applicants a certificate of vaccination since Jan. 1, 1910. Up to May 3 there had been 1,173 cases of smallpox in Vienna since the beginning of the war, with 252 deaths.

Reappearance of More French Exchanges.—The *Archives des Maladies du Coeur*, the *Journal d'Urologie*, and *Annales de Gynécologie et d'Obstétrique* have resumed publication, each saying that the missing numbers for 1914 will be made up in the course of the current year to complete the volume to which the subscribers are entitled.

Maternity Hospitals for Cuba.—The president of Cuba has signed a law providing $400,000 for the erection of six maternity hospitals, one in each province of the island. Of this sum, $100,000 is alloted for the hospital in the province of Habana, and $60,000 each for the hospitals in the other provinces. The money is to be appropriated from the sum accruing to the state from unclaimed lottery prizes.

Campaign Against Alcohol in Austria.—The Austrian *Permanenz-Komitee* for industry, trade and commerce has

recently petitioned the government to interfere to check liquor drinking. The petition states that it is unwise to leave the restriction in the hands of local authorities and political interests. The state should take the matter in hand. Among the measures proposed are that the sale of whiskey and brandy should be limited to the hours between 7 and 12 in the morning, and 2 and 3 in the afternoon, and none be sold on Sunday and holidays nor to persons under 16 at any time, nor to persons known to be habitual drunkards. The petition urges strict enforcement of these measures, and the closing of saloons for repeated infractions, also a penalty for persons found drunk in public places, and for saloon keepers selling to those already drunk. The government, while appreciating the necessity for stricter measures against alcohol, is of the opinion that the matter should be left to the local authorities to handle, as they can conform the regulations to local conditions.

WAR NOTES

More Nurses for Austria.—The American Red Cross sent nine additional trained nurses to Austria, via Genoa, Italy, on the steamer *Duca d'Aosta*.

Captives of War in Germany.—According to an official statement, there were up to April 15, 812,803 prisoners of war in Germany. Before any of the Russian captives are detailed for work on farms they are carefully examined for trachoma, etc.

Anonymous Gifts to Red Cross.—The second anonymous gift of $10,000 to the war relief fund of the American Red Cross was announced May 20. The first gift was reported from Philadelphia and the second donation from Massachusetts.

Sheets, Pillow Cases and Towels Needed.—Mr. H. O. Beatty, director-general of the American Relief Clearing House, Paris, writing under date of May 6, states that there is a great need for cotton sheets, pillow cases and towels in connection with war relief work in France.

Exposition of Arrangements for Caring for the Wounded.—Budapest is having an exposition showing the organized care for the wounded and sick in the war and for hygiene and sanitation in general at the front. It is similar to the exhibition recently held at Berlin, and Germany has sent a special exhibit.

Danish Field Hospital in France.—An exchange states that Professors Ehlers is in charge of the Danish hospital unit recently installed in one of the French cities near the seat of war. Tscherning, surgeon in chief of the public hospital of Copenhagen, and two other surgeons, are with him. The unit is planned for twenty-four beds.

Exchange of Severely Wounded Prisoners.—The *Medizinische Klinik* states that 200 severely wounded French soldiers have already reached Constance, ready to be exchanged for severely wounded German soldiers, captured by the French. This is the first consignment of 1,200 wounded prisoners whom the Germans are collecting for exchange.

High Cost of Drugs in Austria.—The wholesale dealers in drugs in Austria have raised their prices by 10 per cent., while the price of the raw materials has gone soaring to 400 per cent. and more. The associated pharmacists are complaining to the authorities that foreign specialties from the enemies' countries are being smuggled into the country.

Reenforcement for Sanitary Commission.—In response to an appeal from Dr. Richard P. Strong, Boston, for further assistance in Serbia to battle with typhus and other epidemic diseases, twenty-seven additional sanitarians sailed for Serbia, May 10, on the steamer *Athinai* for the Piraeus. A large quantity of medical and sanitary supplies was also sent by this steamer.

Appreciation from German Red Cross.—A letter from the president of the German Red Cross, dated in Berlin, April 15, acknowledges the aid of the American people and its appreciation therefor. The letter also acknowledges receipt of four carloads of gifts from the United States and of the ambulances donated by the students of Yale and Harvard universities.

Thanks from Austria.—The American Red Cross has received a letter from Count Traun, president of the Austrian Red Cross, acknowledging the receipt of a shipment of wearing apparel, linen and hospital supplies sent by the *Finland* via Genoa, and also of the four motor ambulances donated by the students of Harvard and Yale universities, which were shipped by the *Cretic*. Two motor ambulances and one-half of the consignment of hospital supplies were forwarded to the Hungarian Red Cross.

Medical Practice at Rome in Case of War.—The Surgical Association of the Province of Rome has joined in the organized arrangements for civilian medical practice throughout the province. All in the arrangement have agreed to assume the practice on request of the members of the profession called to the colors, and to pay to the families of the colleagues they are substituting all the fees received minus a certain small percentage to be determined by the vote of the officers of the association.

Austrian Society to Combat Epidemic Diseases.—An association of medical and laymen has been founded at Vienna to disseminate information among the public as to the nature of epidemic diseases and means of warding them off. The officers include Profs. von Pirquet and O. Stoerk. One of the first measures to be undertaken is to send a mission to Turkey to aid in combating epidemic diseases there, as an important measure to save Austria from invading plagues. A leading merchant is getting up the expedition, assisted by other nonmedical men.

Appalling Conditions in Serbia.—Dr. Richard P. Strong, Boston, chief of the American Sanitary Commission sent to Serbia by the American Red Cross, Rockefeller Foundation and Serbian Relief Committee, to study epidemic diseases, cables that he has just returned from a second inspection trip, that typhus and recurrent fevers are prevalent among all classes, that at Monastir seven physicians are ill with typhus fever, that in many places there are no doctors at all and that although the conditions are very appalling, the work is progressing satisfactorily. A supplementary party of twenty-six sanitary experts and a large quantity of sanitary and medical supplies was sent to Serbia, May 16, on the steamer *Athinai*.

New Quarantine Hospital in Bohemia.—The largest military hospital on the continent is said by the *Wiener klinische Wochenschrift* to be almost completed at Pardubitz. All the wounded and sick soldiers reaching Bohemia have to spend a few days in this hospital, which will have 10,000 beds to begin with. There are 206 pavilions and 125 administration buildings, with railroad station, postoffice, etc. The personnel is to consist of 125 physicians and 750 nurses. The bacteriologic department is in charge of Professor Jedlicka of Prague. There are provisions also for barracks for soldiers. The sick and wounded reaching Bohemia are kept under observation here for a few days and are then transferred to the "clean" part or to one of the pavilions for contagious diseases, as the case develops. It is hoped in this way to keep epidemic diseases out of the country.

Aid for Belgian Physicians.—The following is an extract from a letter from Dr. George W. Crile of Cleveland:

"When I was in Belgium I received first-hand information from a number of Belgian physicians concerning their plight. They are indeed in dire need and there seems to be no way by which this need can be overcome until their land is restored to them again. The free masonry of the medical profession so binds all medical men together that it seems to me that no appeal to doctors for the aid of their associates in Belgium can be in vain. We should all realize also that no single appeal can satisfy what is going to be a long continued need, that we must give now, later again, and still later and so answer repeated appeals until later conditions may restore to the Belgians the wherewithal to aid themselves."

The report of the treasurer of the committee of American Physicians for the aid of the Belgian profession, for the week ending May 22, 1915, lists the following contributions:

Dr. H. M. Manning, P. A. Surg., U.S.P.H.S., Charleston, S. C.	$ 5.00
Anonymous—K., Toledo, Ohio	5.00
Dr. Dwight G. Kreul, Davenport, Iowa	10.00
M. L. H., Wallum Lake, R. I.	3.00
Knox County Medical Society, Fredericktown, Ohio	10.00
The Medical Club of Portland, Portland, Ore.	25.00
Dr. Edward E. Bancroft, Wellesley, Mass.	10.00
Dr. Thomas St. Clair, Latrobe, Pa.	5.00
Dr. Fred T. Murphy, St. Louis, Mo.	50.00
Dr. Hermann Grad, New York, N. Y.	10.00
Receipts for the week ending May 22	$ 133.00
Previously reported receipts	6,860.50
Total receipts	$6,993.50
Disbursements for the week ending May 22:	
178 standard boxes of food at $2.28	$ 405.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,309 standard boxes of food at 2.30	3,010.70
Total disbursements	6,991.54
Balance	$ 1.96

F. F. STEPSON, M.D., Treasurer,
5 Jenkins Arcade Building.

PARIS LETTER

PARIS, May 6, 1915.

The War

THE DISCHARGE OF TUBERCULOUS SOLDIERS

Professor Landouzy, dean of the Faculté de médecine de Paris, recently presented to the permanent commission on tuberculosis of the interior department a report on this subject which is rendered very opportune by the war. He first takes up the army statistics showing temporary and final discharges for tuberculosis. The number is considerable already and is sure to be greatly increased by the present concentration of troops. Landouzy believes that the years 1915 and 1916 are going to send out over the country 20,000 tuberculous subjects to scatter the germs of the disease in the regions in which they settle after their discharge. This regrettable state of affairs could be modified by radical measures on the part of the war department. It is indispensable in the first place to eliminate without hesitation every man who is affected with open and hence dangerous tuberculosis. In the next place, tuberculosis should not be, as at present, the disease in which is most seldom applied the form of discharge which permits a temporary or permanent pension. It is believed, to be sure, that tuberculosis is rarely contracted in barracks and that military life is seldom the source of infection. This may be true, but the overexertion inseparable from this life is without doubt the greatest factor in causing the latent disease to become active. Men who contract or develop tuberculosis under such conditions readily become sources of infection in their turn; they are eligible for the form of discharge just mentioned. Today the danger is increased by the fact that the *conseils de revision* have just placed in active service men who were previously discharged because of tuberculosis but who are now found in good condition and may again become a source of danger owing to the uncomfortable life of the trenches and promiscuity which it entails. When these men become unmistakably tuberculous and incapable of taking part in the campaign, as they too frequently do, has the army the right simply to rid itself of them by discharging them and taking no further interest in them? How about those whom these tuberculous patients infect? Landouzy believes that, on the contrary, the army should, to a certain extent and for a limited time, assume the responsibility for such invalids. This would tend to encourage a more rigorous selection at all stages of the service. Men discharged on account of tuberculosis ought not to leave the army without being assured of treatment, education in regard to tuberculosis and assistance. Such measures would tend to protect the general population from carriers of the disease. After this war there will be tuberculous patients who will be war invalids just as much as are the soldiers wounded in battle. The nation owes the same debt of gratitude to both. This debt is all the more sacred so far as the tuberculous patient is concerned because his disease has, to some extent, set him apart as a source of danger to the rest of the population.

THE WAR AND DECEPTIVE ADVERTISEMENTS

I mentioned in a previous letter (THE JOURNAL, Oct. 3, 1914, p. 1217) how certain unscrupulous manufacturers in advertising their goods have brazenly imitated the official notices to the public on the subject of hygiene. M. Edmond Bonjean, member of the Conseil supérieur d'hygiène publique de France, has just made a very detailed report to the Société de médecine publique, in regard to deceptive advertisements on subjects of public hygiene. He shows that certain preparations promoted by ingenious publicity and recommended as a sure means of avoiding epidemics are entirely without efficacy. Such advertising may have an injurious effect on the public health, for it leads those who put faith in it to neglect really effective methods, such as immunizing vaccinations or rational disinfections. In a period of national emotion, during a unanimous outburst of patriotism and generosity, says Bonjean, such misleading advertisements easily induce the public to buy these ineffective specialties and send them to the soldiers. Bonjean believes that the law for the repression of frauds might be applied to these dangerous misrepresentations.

AUTOMOBILE SURGICAL AMBULANCE

One of the aims most diligently sought by the military medical service has always been to be able to give soldiers wounded at the front the necessary surgical attention as soon as possible. The first aid posts and the first line ambulances unfortunately cannot perform major surgical operations under satisfactory conditions and the wounded are compelled to be removed to base line hospitals before being operated on; often, therefore, the operation is made too late. Automobile surgical ambulances constitute a great advance in this respect. A real flying surgical hospital, capable of being installed near the front, in which it is possible to operate on a great number of the wounded, can thus be realized. The installation comprises nine 20 horse power automobiles. Six serve for the transportation of the supplies and the staff, one is a radiologic laboratory, another carries the autoclave and the last is the pharmacy. The head surgeon chooses a situation by the side of an ambulance in which he can place his patients after operation. The cars immediately take the places appointed for them. In half an hour a tent is pitched and a surgical pavilion installed. It includes three apartments; a preparation room, a dressing room and an operating room with four tables. The autoclave car is placed at a right angle to the side of the operating room so as to open into it. In front is the radiologic car provided with the latest improvements and permitting precise investigations. The whole is lighted up with electricity furnished by the motors and floored with sheets of aluminum. Everything is capable of being cleansed by having water turned on. The whole constitutes a complete surgical installation which might be envied by many permanently housed institutions. A hundred wounded men can be cared for there during a day. The staff consists of a head surgeon, six assistants, a pharmacist, an administrative officer and twenty-five nurses, of whom ten are medical students. The first of these mobile formations set out for the front May 5. The construction of thirty others is under way.

AID FOR MEN BLINDED IN THE WAR

Devoted teachers are instructing those poor soldiers who have become blind in the ingenious Braille method of writing and reading. The books in Braille characters, however, are very expensive, for the process of printing them is a lengthy and delicate one, and this has limited the output.

A cultivated young blind man has just founded an association the members of which pay a modest annual fee, the sum thus obtained being used to print in Braille characters good books of every kind. As a fitting token of gratitude, the association has been given the name of the Swiss oculist and friend of the blind, Dr. Marc Dufour. Among its active and honorary members the Association Marc Dufour numbers the surgeon C. Roux, Professor Combe and Dr. O. Dufour; it has already an income of about $200 a year. Requests for further information, applications for membership, gifts, etc., may be addressed to the Association Marc Dufour, Chez M. E. G. Carey, avenue Agassiz, 3, Lausanne, Switzerland.

Death of Professor Thoinot

Dr. Léon-Henri Thoinot, professor of legal medicine at the Faculté de médecine de Paris, has just died suddenly of hemorrhage, aged 57. In 1906 he succeeded his master, Professor Brouardel, in the chair of legal medicine. He was a physician of the Laennec Hospital and since the outbreak of the war had been head of the contagious disease service at the military hospital of Val-de-Grâce. His studies had been especially on the subjects of hygiene, sanitation and disinfection. He had made numerous investigations on epidemics of typhoid in miliary fever and diphtheria. He was highly esteemed as an expert in judicial circles.

BERLIN LETTER

BERLIN, April 20, 1915.

Death of Löffler

April 9, the professor of bacteriology, Frederick Löffler, died at the age of 62. Immediately after the outbreak of the war he departed to the battle front and served as advisory hygienist to one of the army corps, performing his duties with great earnestness. In November, following an attack of severe intestinal trouble, he was compelled to return home. An operation was deemed necessary, and Professor Bier discovered the presence of a pancreatic carcinoma.

Löffler was born June 24, 1852, at Frankfurt-on-the-Oder, where his father, who subsequently was director of the Pépinière in Berlin and a distinguished military surgeon, was serving as regimental surgeon. After a short period of study in Wurzburg, Löffler entered the Pépinière, which is today the Kaiser-Wilhelms Academy, and after his graduation became a military surgeon in Hannover. Later he served in the same capacity in Potsdam, and in 1879 was appointed to the state sanitary department, working chiefly in the

chemical and hygienic laboratory under Sell and Wolffhügel. In 1880, when Robert Koch was appointed director of the national health department, he asked Löffler to enter his laboratory and Löffler had a large share in Koch's work on infection and sanitation. Löffler studied particularly questions of immunity. In 1881 he discovered a mouse bacillus against which, after several injections, he was able to immunize rabbits. After much study on the causes of nasal infections, he discovered the diphtheria bacillus, and for this work he obtained a world-wide reputation.

In 1884 he left this service and became a member of the staff of the Kaiser-Wilhelms Academy, where he continued his investigations. He was then offered the position of director of the chemical hygienic laboratory in the state military service. After he was established as a teacher in hygiene, in 1886, he was called as professor to Giessen and Greifswald in 1888. He decided on the latter university, where he worked until 1913, when he was called to succeed Gaffky as director of the Robert Koch Institute for Infectious Diseases in Berlin. In Greifswald, Löffler devoted himself chiefly to the infectious diseases of animals, and discovered various facts concerning methods of prevention of epidemics. He worked on the prevention of foot and mouth disease, and outlined a method of immunization, which was tested on some animals on a small island in Greifswald Bay, in order to prevent a wider dissemination of the disease. Up to the time of his death, Löffler worked to make his method less costly, as the high price of the immunizing serum prevented its general adoption. Löffler also discovered the causes of the red murrain of pigs and other hog diseases.

Löffler's name is one which is today known throughout the world for his scientific discoveries, of which those mentioned form but a small part.

Congress of Military Surgeons in Brussels

At the suggestion of the chiefs of the field hospitals, a congress of the German military surgeons was held at Brussels in place of the meeting of the German Surgical Society usually held in Berlin; about 1,200 surgeons assembled from all the battlefields, April 1, 1915. Papers were read by prominent surgeons, but for sundry reasons their discussion had to be omitted.

TREATMENT OF HEMORRHAGE

The first paper by Generalarzt Garrè was on the handling of hemorrhage both at the front and later. The stopping of bleeding is one of the most important tasks of the field surgeon. When only the usual tampons and constrictors are used, there may still be enough bleeding from some vessels to result in death. Garrè recommended as the most accurate method of controlling hemorrhage the clamping of bleeders with forceps that are left in place until the dressing is changed. He also spoke of the use of transfusion with physiologic salt solution in cases in which the loss of blood had been great, and stated that stimulus by camphor, caffein, etc., was often more efficacious in impending cardiac failure. Early operation was also advised for skull injuries and for abdominal wounds in which there was danger of internal hemorrhage or injury to stomach or intestines. The earlier the operation in these cases, the better is the prognosis. The necessity for early relief under unfavorable conditions of wounds of the lower urinary apparatus makes the use of the methods used in time of peace impossible and resort to bladder puncture necessary. Every bullet wound is at first, in all probability, not infected, but every grenade wound is; 83 per cent. of all Garrè's especially severe wound infections were due to grenades. This is natural when one considers that these bombs burst on the ground and so carry into the wound dirt as well as fragments of infected clothing. Garrè believes that all such wounds should be thoroughly explored and cleaned out with the gloved hand in the field hospital (the advisability of this is questioned by other speakers). In wounds of the extremity, the speaker preferred conservative handling to early operation.

Generaloberarzt Friedrich of Königsberg spoke of his medical experiences and of the terrible condition of affairs that is arising on the Eastern Russian battle front. He also recommended the clamping of bleeders in preference to the use of constriction and tampons.

TREATMENT OF TETANUS AND GAS GANGRENE

The treatment of tetanus and gas bacillus infections was discussed by Generalarzt Kümmel of Hamburg. In the Crimean War, tetanus occurred in 1.5 per cent. of cases; in the American Civil War, in 2.5 per cent.; in the Franco-Prussian, in 3.5 per cent., and in the present war in 6.5 per cent. of cases. This shows how thoroughly the French soil is impregnated with the organism causing this disease. The early recognition of this disease is of greatest importance as it is much more difficult to cure when it is fully developed. Here again, and for the reasons mentioned above, the grenade wounds are the most dangerous. The sooner after the injury the symptoms appear, the worse is the prognosis in spite of the tetanus antitoxin. A combination of antitoxin with salvarsan has been advised, but Kümmel believes that magnesium sulphate is of greater value; the use of narcotics and the continuous water bath must also be considered. The speaker and many other observers recommend the use of a prophylactic dose of antitoxin, especially as little as 20 units will almost certainly suffice to ward off the disease. A most serious infection for which there is a specific cause is the gas bacillus infection. Its rapid course makes early energetic treatment necessary. A patient who is suspected of having such an infection should be carefully examined every two hours, and as soon as the diagnosis is established, the part must be radically opened up; a small incision in the skin and superficial fascia does not suffice, free incision down into the muscles being necessary. According to the work of Professor Franz, toxins are present in the blood even when there is no bacteremia.

TREATMENT OF SKULL INJURIES

Generalarzt Tilmann of Cologne spoke on skull injuries. In scarcely any type of wound is so great a variety of symptoms found as in skull injuries. While penetrating wounds of the skull often result in an early death, glancing wounds are almost as dangerous because of the more extensive injury to the brain that may be present. In penetrating wounds, the damaged brain tissue, etc., comes out of the larger wound of exit of the bullet; how much the brain is damaged depends on whether a fragment of bone is driven into it and on whether any vital centers are injured. The paralyses, etc., that are often present at first may disappear in a few days. When the wounds are first examined in the field where facilities for aseptic operating are not present, conservative treatment is advised; here only the stopping of hemorrhage and the removal of splinters of bone must be considered. Piercing wounds are operated on only after the bullet has been located by means of roentgenography. In diagnosing a meningitis, which often shows itself on the first day, a spinal puncture is often of great assistance. A more frequent form of infection following skull wounds is encephalitis, only the serous form of which is curable. Brain abscess is a condition both difficult to diagnose and to treat.

TREATMENT OF CHEST WOUNDS

That chest wounds are not so dangerous as might be expected has been clearly shown in the countless cases in the present war. Many cases of bullet wounds of the lungs not complicated by injury to the ribs or the larger pulmonary vessels heal rapidly. Bleeding into the pleural cavity from small arteries is, as Oberstabsarzt Sauerbruch of Zurich pointed out, rather a rare occurrence, and little blood is generally lost in this way. Much the most serious wounds are those produced by grenades. In summing up these cases, delayed hemorrhage and the rise in temperature due to secondary infection must be considered. The germs that escape into the pleural cavity with the injury to the lung find in the clotted blood an excellent culture medium. Simple drainage of the pleural cavity is generally all that is necessary in these cases, though at times it is necessary to operate on the lung itself. Those wounded through the lungs must be kept absolutely quiet. Generaloberarzt Borchard of Posen pointed out that a prolonged compression of the lung may be dangerous, especially when it is accompanied by thickening; when this is feared, after a suitable interval he makes an incision to permit the escape of the fluid and so relieve the lung.

TREATMENT OF PENETRATING WOUNDS OF THE ABDOMEN

In his discussion on penetrating wounds of the abdomen, Generalarzt Körte of Berlin cited many cases. He demonstrated that in this line of work the methods used in times of peace were not practicable, because such wounds are encountered rarely in time of peace and because of the complications presenting themselves in time of war, and on account of the difficulty of transportation. The prognosis in those cases which come up for treatment more than twelve hours after being wounded is bad. When the battle line is in motion, this delay in getting the wounded to a place where they can be cared for is more apt to happen than when the troops are intrenched and have their regularly appointed field hospitals in which it is possible to perform complicated operations. In spite of the great penetrating power of the bullets, piercing of the abdomen without injury to the intestines

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is rare, though it does occur. In a large series of penetrating wounds of the abdomen, Körte had a mortality of 60 per cent., which would have been even larger if the patients who did not live to get to the rear had been included. Internal hemorrhage and the almost certain injury to the viscera make early surgical treatment the safest method.

Oberstabsarzt Schmieden of Halle stated that the expectant treatment of these cases was all right in theory, but was not possible in time of war, as the necessary conditions such as absolute quiet could not be obtained in time of war. He took the stand that every patient with abdominal injury coming to the skilled surgeon less than twelve hours after being injured should be operated on at once; thus the exact nature of the damage may be ascertained, and if only the liver is injured, the hemorrhage may be stopped, or if the other viscera are injured, whatever is needed may be done. Also experience shows that while the percentage of cases of injury to the stomach or intestines is small, it is even smaller if operation is not performed early. Furthermore, the late complications of pregnancy, such as abscess, etc., which are often hard to diagnose, make the mortality even higher. He also stated the mortality was lower in those soldiers who, being in a dangerous place, were on short rations, had an empty gastro-intestinal canal and so were better prepared for intestinal wounds. Generaloberarzt Friedrich of Königsberg believed that wounds of the small intestine are more dangerous than those of the stomach, large intestine or liver. Generalarzt Rehn of Frankfort-on-the-Main made the same observation.

WOUNDS OF THE EXTREMITIES

Generalarzt Payr of Leipzig and Stabsarzt Goldammer treated the voluminous subject of wounds of the extremities. The great economic significance of this class of wounds makes it necessary to treat them with the greatest care. Here again grenade wounds are found to be the most severe, shrapnel next and bullet wounds least. With grenade wounds, free incision with complete removal of all dirt and pieces of clothing, splinters of bone, etc., is necessary. In spite of this, there is nearly always more or less infection which sometimes gives rise to a septicemia and sometimes to osteomyelitis. In all cases, a very firm dressing is contraindicated, and immobilization is of greatest importance, especially in joint wounds. This keeps the limb quiet and permits the best drainage of the wound. The speaker stated that plaster casts were of value, especially in cases that could not be under constant observation. The use of manufactured splints is possible only in hospitals, in which they are found very convenient, as Professors Rehn, von Eiselsberg and others said.

Marinegeneralarzt Bier of Berlin spoke on the surgery of blood vessels and aneurysms.

The establishment of numerous Roentgen-ray outfits was decided on at the meeting.

Personal

Prof. Carl Fraenkel has resigned his position as chief of the Institute of Hygiene at Halle, on account of his health. On the occasion of his baptism a few years ago (undoubtedly to favor the prospects of his son, an officer in the army), he changed his name to Fraenken. He had a cerebral hemorrhage ten years ago, although he was only 42 years old at the time. He recuperated completely from that attack, so that he was able to resume his teaching and research work. Fraenkel was one of Robert Koch's most gifted pupils, and has accomplished much in various fields of bacteriology and hygiene.

The seventieh birthday of Prof. Friedrich Merkel, director of the Institute of Anatomy at Göttingen, was celebrated April 5. He followed the anatomist Henle in this position in 1885. Among the manuals he has published, the best known are his revision of Henle's "Grundriss der Anatomie" and the "Handbuch der topographischen Anatomie."

The director of the Institute of Pharmacology at Halle, Professor Harnack, died April 24. Like his brother, the theologist of Berlin, he was born at Dorpat in Russia. He studied under Schmiedeberg, the Strassburg pharmacologist, and was called to Halle in 1889 as regular professor. He published a revision of Buchheim's manual of materia medica, the "Lehrbuch der Arzneimittellehre," and wrote for physicians a work embracing the principal facts of chemistry, "Haupttatsachen der Chemie," and has done research work in various fields of his specialty. He conducted a campaign against homeopathy, his articles appearing in the *Deutsche medizinische Wochenschrift*.

Professor Roentgen of Munich reached his seventieth milestone March 27, and to honor the occasion the kaiser presented him with the iron cross. The message of congratulations sent him by the kaiser at the same time said: "The German nation cannot be grateful enough to the discoverer of the rays for whom they are named. The many advantages from the use of the rays are being rendered apparent by the war more than ever before"—*Die segensreiche Verwendung der Strahlen lässt sie gerade jetzt im Kriege ausserordentlich schätzen.*

LONDON LETTER

LONDON, May 14, 1915.

Death of Sir William Gowers

Sir William Gowers, M.D., F.R.C.P., F.R.S., the neurologist, has died at his residence in London. He had a brilliant career as a student, and graduated with the degree of M.D. from the University of London, in 1870, with a gold medal. At an early period he interested himself in nervous diseases, and was appointed to the famous Hospital for the Paralysed and Epileptic, Queen's Square, which may be considered the home of British neurology. He formed one of the brilliant galaxy which included Hughlings Jackson, Ferrier and Bastian, who were the founders of neurology in this country. In 1879 he delivered the Goulstonian Lectures and took for his subject epilepsy, to which his contribution was epoch making. He published a book on "The Diagnosis of Diseases of the Spinal Cord," which at once became a classic. For the first time he showed the intimate relation between the anatomy and the symptomatology of disease of the spinal cord. In 1885 appeared his "Diagnosis of Disease of the Brain." The clinical and pathologic observations of Hughlings Jackson and the experimental work of Fritsch, Hitzig and Ferrier had completely altered the conceptions of cerebral physiology and functions, and Gower's acute mind readily grasped the significance of their observations. He laid down principles and rules which at the present day are perhaps a little extended but scarcely in any way altered. Finally appeared his crowning work, the "Manual of Diseases of the Nervous System." His clinics were attended by physicians from all over the world interested in neurology, and he was considered easily the greatest diagnostician of the day in diseases of the nervous system.

Sickness Benefit Claims Under the Insurance Act

As pointed out in previous letters to THE JOURNAL, the insurance act has shown in the working several defects due to its socialistic nature. A committee appointed by the government has issued a report on the question whether the claims made on the funds, either of societies in general or of societies of particular types, are in excess of the claims which under a proper system of administration should have been made on and allowed by them. The committee finds little, if any, evidence of fraud on the part of insured persons, or of deliberate malingering, but considerable evidence of a tendency to take the utmost advantage of the benefits under the act. Taking women, as a whole, experience shows that sufficient provision has not been made for sickness benefit granted to them; that is, either the amount paid as premium is insufficient or the amount of the policy money is too great, and this applies both to single and to married women. In the case of both sexes great difficulty is caused by a doubt as to the meaning of the criterion of incapacity set up under the act, and the committee recommends that the conditions of sickness benefit should be more precisely defined. A new benefit is recommended to be paid to a pregnant woman, in respect to the last four weeks of pregnancy, whether she is incapacitated or not. It is also recommended that payment should be made to a pregnant woman who is incapacitated from following her occupation in the month previous to the last month, whether she is incapacitated by pregnancy alone or by pregnancy accompanied by some other condition.

The War

THE EVACUATION OF THE WOUNDED

An account of the exact method of dealing with the wounded may be of interest. The medical organization in the field consists at the front of two kinds of formations, those of "armies" and those of "divisions." The former are under a director of medical services who, while responsible for the working of all units and branches of the medical service within his army, has under his direct control the large clearing stations established within easy reach of the railway, the motor ambulance convoys, and all sanitary arrangements in the particular army area. The divisional formations are

under the assistant director of medical services of the division, who controls the field ambulances, dressing stations, aid posts and sanitary sections in the divisional area. Take the case of a man struck by a bullet while advancing, and left lying in the open under a hail of shrapnel bullets, which are striking the ground all round. From this hazardous position he is rescued by two stretcher bearers who, choosing their moment, rush across, pick him up and carry him back to the shelter of a trench. These bearers may either be from his own unit, sixteen men of which, in the case of an infantry battalion, have been trained in the first aid and stretcher drill, or they may be men of the Army Medical Corps belonging to a bearer subdivision of a field ambulance. They will take him to his "regimental aid post," probably situated in a dug-out, in a cellar, or in some sheltered spot giving cover from fire, where he will receive first aid from the army surgeon attached to the battalion. From this he will be conveyed either on a stretcher or, if circumstances permit and a road is handy, in a horsed ambulance wagon to the nearest dressing station.

As soon as he is placed in the ambulance wagon, he passes out of regimental care into the charge of one of the formations of a division known as "divisional field ambulances." Such an ambulance is composed of three sections, each consisting of a bearer subdivision and a tent subdivision. The former are organized for the purpose of collecting the wounded, while the latter form dressing stations. The advanced dressing stations are pushed forward as close as possible to the front, and are situated in houses alongside roads so as to facilitate conveyance to and fro. On the arrival of the patient at one of these, his wound is carefully attended to, and he is injected with antitetanic serum. He is then carried by a motor or horsed wagon belonging to a divisional field ambulance to one of the larger dressing stations, which has been opened possibly in a school, a convent or a church in some town or large village situated further to the rear, where he is given food. Here the wounded are sorted according to the nature of their injuries, and prepared for transport to the casualty clearing station on motor ambulance wagons. They thus pass out of the hands of the division into the formations under direct control of the army.

The casualty clearing stations are generally situated at the railheads, so that patients can be carried direct from them to the ambulance trains. They are not hospitals in the true sense of the word; but a proportion of serious cases, such as those of certain kinds of injury to the head or abdomen, which cannot be moved without danger, may be retained in them for a considerable time. Equipped and staffed to deal normally with 200 patients, they have a sufficiently elastic organization to be able if necessary to cope with much larger numbers during the progress of a battle, and special arrangements are made for temporarily augmenting the staff when severe pressure is expected. Here the patient will for the first time experience the luxury of being tended by nursing sisters and of lying on a bed. The length of his stay will depend on the railway facilities; but as a rule it will not be more than a few hours before he is placed on an ambulance train. Once on board the train, he leaves what is known as the "collecting zone," and enters the "evacuating zone," and at the same time passes out of the charge of the medical authorities of the army into that of the line of communications.

On arrival at a base, the wounded man is again carried in a motor ambulance wagon to a fully equipped permanent hospital. These hospitals are of two kinds, general and stationary, the difference being chiefly in the number of patients accommodated. A third category of hospitals found at the bases is composed of Red Cross or voluntary hospitals. The personnel and equipment of these are provided by the society or subscribers who organized the unit; but each is under the command of an officer of the Army Medical Corps. A great difficulty experienced is that of reconciling the need of seriously wounded men for complete rest with the necessity for avoiding the congestion which would be caused by retaining them at the casualty clearing stations during an action, a time when large numbers of wounded have to be dealt with. Not many can be retained, and yet any movement or jolting such as that caused by a train or motor journey might involve grave risk. A solution of this problem has been found to a limited extent in the use of water transport on the excellent system of canals with which Northern France is supplied. The serious cases of this nature are carried by barge from the clearing stations near the front to the most advanced hospitals on the lines of communication. The barges have been specially converted into hospital craft, having been fitted with operating tables and all the necessary accessories, and each can accommodate forty patients. They are towed by tugs.

Marriages

FRANCIS J. TOWNSEND, M.D., to Miss Anna Rayne, both of Ocean City, Md., at Snow Hill, Md., May 4.

HUGO OLIVER PETERSON, M.D., to Miss Marie Euphrosyne Dahlstrom, both of Worcester, Mass., May 19.

WILLIAM FRENCH SMITH, M.D., to Miss Margaret R. Dawson, both of Somerville, Mass., May 12.

LOUIS CHARLES DEANE, M.D., to Miss Mabel Short, both of San Francisco, at Los Angeles, May 9.

CLARENCE H. BRYAN, M.D., to Mrs. Ray N. Mathews, both of Chicago, May 15.

Deaths

Nathaniel Eugene Wordin, M.D. Jefferson Medical College, 1875; a member of the Connecticut State Medical Society, American Academy of Medicine and American Public Health Association; for seven years secretary, and in 1905 president of that organization; once president of the Fairfield County and Bridgeport Medical associations; a member of the State Board of Health, from 1890 to 1899; for many years physician to the Bridgeport Hospital and Bridgeport Protestant Orphan Asylum; a veteran of the Civil War; well known as an author and historian; died at his home in Bridgeport, May 10, from cerebral hemorrhage, aged 70.

George Ansley Wilcox, M.D. New York University, New York City, 1871; a Fellow of the American Medical Association and a member of the Southern Medical Association; professor of gynecology in the University of Georgia, Augusta, and formerly professor of materia medica and therapeutics and of obstetrics in the same institution; gynecologist to the Augusta (Ga.) City and Lamar hospitals; one of the most prominent and beloved practitioners of Augusta, and the first to be given the honorary degree of M.D. by the University of Georgia; died at his home in Augusta, May 5, aged 64.

George Cornelius Bailey, M.D. New York University, New York City, 1886; a member of the Connecticut State Medical Society; for many years a member of the board of directors, consulting physician, head of the gynecologic department and president of the staff of St. Francis' Hospital, Hartford, Conn.; a member of the board of school visitors since 1896; died at his home in Hartford, May 10, from pneumonia, aged 50.

James Jackson Purman, M.D. Howard University, Washington, D. C., 1880; a veteran of the Civil War, who was awarded the Congressional Medal of Honor for gallantry on the battlefield of Gettysburg; formerly an attorney of Green County, Pa.; medical director of the Department of the Potomac, G. A. R.; since 1881 a clerk in the pension office; died at his home in Washington, May 10, aged 73.

Samuel G. Kelly, M.D. Northwestern University Medical School, Chicago, 1903; a Fellow of the American Medical Association and American Academy of Ophthalmology and Oto-Laryngology; and eye, ear, nose and throat surgeon for the Missouri, Kansas and Texas Railroad; died at his home in Sedalia, Mo., April 24, from cerebral hemorrhage, aged 34.

Jessie Wheeler, M.D. Womans' Medical College of Pennsylvania, Philadelphia, 1902; formerly a Fellow of the American Medical Association; a member of the Kansas Medical Society; formerly of Sacramento, Cal., but for the last nine years a practitioner of Salina, Kan.; died in St. Barnabas' Hospital, Salina, from malignant disease, aged 40.

Thomas Joseph McLoughlin, M.D. College of Physicians and Surgeons in the City of New York, 1869; a Fellow of the American Medical Association; surgeon to the Jersey City Hospital, and medical director of St. Francis' Hospital, Jersey City; died at his home in Jersey City, May 12, from septic pneumonia, aged 70.

Niles Harrison Shearer, M.D. University of Maryland, Baltimore, 1866; a member of the Medical Society of the State of Pennsylvania and American Academy of Medicine; surgeon of volunteers during the Civil War; a druggist and financier of York, Pa.; died at his home in that city, May 5, aged 73.

John Lloyd Brown, M.D. University of Louisville, Ky., 1885; formerly president of the Menifee County (Ky.) Board of Health, county referee and local surgeon of the Chesapeake and Ohio Railway at Morehead, Ky.; died at his home in Rothwell, Ky., April 13, from cerebral hemorrhage, aged 51.

Edward Clinton Fish, M.D. University of Michigan, Ann Arbor, 1883; a member of the State Medical Society of Wisconsin; for thirty years a practitioner of Mosinee, Wis.; and for twenty-five years justice of the peace; died at his home in Mosinee, May 9, from tubercular meningitis, aged 56.

Nelson G. West, M.D. Jefferson Medical College, 1854; a member of the Medical Society of Virginia and president of the Loudoun County Medical Society; surgeon in the Confederate service during the Civil War; died at his home in Leesburg, Va., May 11, from senile debility, aged 83.

James R. Willis, M.D. Long Island College Hospital, Brooklyn, 1876; formerly secretary of the Vigo County Board of Health and twice coroner of Vigo County, Ind.; once president of the Vigo County Medical Society; died at his home in Terre Haute, Ind., May 4, aged 61.

Jacob R. Brown (license, Indiana, 1897), for more than sixty years a resident of St. Joseph County, Ind.; surgeon of the Twenty-Ninth Indiana Volunteer Infantry during the Civil War; died at the home of his nephew in Crumstown, Ind., May 1, from senile debility, aged 91.

George Nelson Perry, M.D. Howard University, Washington, D. C., 1884; professor of obstetrics and pediatrics in his alma mater; a member of the Medical Society of the District of Columbia; died at his home in Washington, May 10, from heart disease, aged 64.

Charles Edward Fraser, M.D. Bellevue Hospital Medical College, 1871; once superintendent of the State Custodial Asylum, Rome, N. Y., and for two years coroner of Oneida County; died at his home in Lacona, N. Y., May 10, from cerebral hemorrhage, aged 65.

Ollie L. Townsend, M.D. Hospital College of Medicine, Louisville, 1881; a member of the Kentucky State Medical Association and president of the Farmers' Bank of Glensboro, Ky.; died at his home in Lawrenceburg, May 11, from disease of the spleen, aged 55.

Josiah Thomas Scovell, M.D. Rush Medical College, 1867; for ten years professor of science in the Indiana State Normal School and later head of the science department of the Wiley High School, Terre Haute, Ind.; died at his home in that city, May 8, aged 73.

Albert Joseph Roberts, M.D. Harvard Medical School, 1902; a member of the Connecticut State Medical Society; a member of the staff of the Bridgeport (Conn.) Hospital; died in that institution, May 11, from cerebral hemorrhage, aged 40.

Samuel Mardis Hogan, M.D. University of Louisville, Ky., 1873; a member of the Medical Association of the State of Alabama, and the Southern Surgical and Gynecological Association; died at his home in Montgomery, Ala., May 7, aged 77.

William B. Denny, M.D. Meharry Medical College, Nashville, Tenn., 1880; a well-known colored practitioner of Nashville; pastor of the Salem A. M. E. Church; died at his home in Nashville, May 4, from cerebral hemorrhage, aged 63.

Hugh R. Rutledge, M.D. Medical College of the State of South Carolina, Charleston, 1846; a surgeon in the Mexican War; and said to have been the oldest practitioner in Mississippi; died at his home in Greenville, May 6, aged 91.

Henry B. Roberts, M.D. Atlanta (Ga.) Medical College, 1882; representative from Crisp County in the Georgia Legislature and chairman of the County Board of Education; died at his home in Cordele, May 8, from nephritis, aged 63.

Thomas Perkins Smith, M.D. Harvard Medical School, 1880; a Fellow of the American Medical Association; formerly physician of the city and township of Westbrook, Maine; died at his home in Westbrook, May 7, aged 62.

Maximilian Jacoby, M.D. Long Island College Hospital, Brooklyn, 1910; of Chrome, N. J.; died in the Elizabeth (N. J.) General Hospital, April 9, from septicemia, due to Roentgen-ray burns of the finger, aged 32.

John Henry Urich, M.D. Boston University, 1892; assistant in the department of diseases of the skin and later lecturer on diseases of the skin in his alma mater; died at his home in Boston, February 26, aged 53.

James R. Glover (license, years of practice, West Virginia, 1881), formerly of Pennsboro, W. Va.; but for the last year a resident of Cleveland; died at his home in the latter city, March 11, from pneumonia, aged 70.

Horace Morgan Fritz, M.D. Jefferson Medical College, 1879; a member of the Medical Society of the State of Pennsylvania; died at his home in Quincy, May 12, from cerebral hemorrhage, aged 60.

Robert Augustus Stewart, M.D. New York University, New York City, 1878; formerly a member of the town council of Phillipsburg, N. J.; died at his home in that city, May 14, from heart disease, aged 64.

Sherman Edwards, M.D. Rush Medical College, 1893; for fifteen years a practitioner of Oakfield, Wis.; died in his apartments in Milwaukee, Wis., May 2, from tuberculosis, aged 50.

William F. Goldin, M.D. Atlanta (Ga.) Medical College, 1877; formerly representative and state senator from Haralson County, Ga.; died at his home in Draketown, Ga., May 10, aged 65.

Frederick Ira Beard, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1861; one of the oldest practitioners of Clark County, Mo.; died at his home in Kahoka, May 4, aged 74.

Isaac Newton Houston, M.D. Jefferson Medical College, 1880; a member of the West Virginia State Medical Association; died at his home in Moundsville, W. Va., May 3, aged 64.

Franklin Ellis Kelly, M.D. Louisville Medical College, 1895; a member of the Illinois State Medical Society; also a druggist; died at his home in Green Valley, Ill., April 29, aged 59.

James J. Reilly, M.D. University of Minnesota, Minneapolis, 1886; of Milton, N. Dak.; died in the state penitentiary, Bismarck, N. Dak., May 9, from pneumonia, aged 49.

Albert Felix Fuchs, M.D. Rush Medical College, 1882; a physician and druggist of Loyal, Wis.; died at his home in that place, May 5, from disease of the kidney, aged 58.

Jasemin McAlpin, M.D. Woman's Medical College, Baltimore, 1887; of Warren, Pa.; died in the Bradford (Pa.) Hospital, May 11, from intestinal obstruction, aged 50.

John Alphonsus Lee, M.D. College of Physicians and Surgeons, Boston, 1914; of Boston; died in the Framingham (Mass.) Hospital, May 6, from heart disease, aged 28.

Tirey C. Dollens (licensed, Indiana, 1897), formerly a member of the Indiana State Medical Association; died at his home in Trinity Springs, Ind., May 5, aged 71.

William Becker (license Md.); a veteran of the Civil War; and a practitioner since 1869; died at his home in Baltimore, April 25, from pneumonia, aged 70.

James B. Maple, M.D. Missouri Medical College, St. Louis, 1878; a veteran of the Civil War; died at his home in Custar, S. Dak., recently, aged 79.

Charles Neil Shellenberger, M.D. Pulte Medical College, Cincinnati, 1878; died in Colorado Springs, Colo., his home, April 29, from heart disease, aged 58.

John N. Frank, M.D. Washington University, St. Louis, 1869; twice coroner of St. Louis County, Mo.; died at his home in St. Louis, May 3, aged 66.

Thomas Stewart Blake, M.D. Medical College of the State of South Carolina, Charleston, 1849; died at his home in Ninety-Six, S. C., May 4, aged 88.

Samuel Thomas Cubbage, M.D. Jefferson Medical College, 1895; died at his home in Felton, Del., April 1, from pernicious anemia, aged 50.

John Fenton Kinney, M.D. Indiana Eclectic Medical College, Indianapolis, 1882; died at his home in Idaho, O., April 27, aged 63.

Silas W. Darrow, M.D. Homeopathic Hospital College, Cleveland, 1877; died at his home in Brockport, N.Y., May 5, aged 68.

Frederick W. Montgomery, M.D. Druidic University of Maine, Lewiston, 1882; died at his home in Wichita, Kan., May 4, aged 58.

Florestano Bruno, M.D. Chicago College of Medicine and Surgery, 1913; died at his home in Lawrence, Mass., May 1, aged 33.

E. L. Jacobs (license, Ark., 1903); died at the home of his daughter in Harrisburg, Ark., May 2, aged 82.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

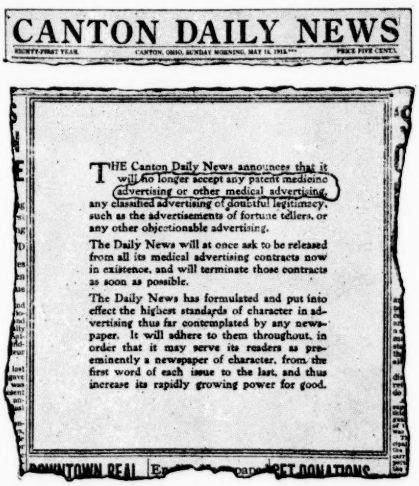
AND STILL THEY COME

Another Daily Paper Rejects All Patent Medicine Advertisements

And now it is the Canton (Ohio) *Daily News!* In its issue of May 15, 1915, this paper announced that it would "no longer accept any patent medicine advertising or other medical advertising" for its pages. It gives among its reasons for taking this step, first, that it seeks to be a newspaper of character and strives for high ideals; second, that it recognizes a growing sentiment that newspapers must be judged as a whole by the standard of their advertising columns as well as by the standard of their news and editorial columns, and third, that it realizes that "advertisements are known by the company they keep" and the *Daily News* wishes its advertisements to be favorably known. Its editorial attitude toward the "patent medicine" business is thus expressed:

"The *Daily News* believes that patent medicines, taken in the bulk, are an evil. Therefore they should not exist. The *News* has never heard any one argue to the contrary and it does not believe there are any arguments to the contrary. It has already received many endorsements of its stand, and no criticism.

"Some patent medicines are the most vicious products of our time. They promise cures for incurable diseases. They cost lives by standing in the way of proper treatment of diseases which are curable by such treatment. They act as substitutes for liquor where liquor is barred. They create drug fiends.



CANTON DAILY NEWS

EIGHTY-FIRST YEAR. CANTON, OHIO, SUNDAY MORNING, MAY 16, 1915. PRICE FIVE CENTS.

THE Canton Daily News announces that it will no longer accept any patent medicine advertising or other medical advertising, any classified advertising of doubtful legitimacy, such as the advertisements of fortune tellers, or any other objectionable advertising.

The Daily News will at once ask to be released from all its medical advertising contracts now in existence, and will terminate those contracts as soon as possible.

The Daily News has formulated and put into effect the highest standards of character in advertising thus far contemplated by any newspaper. It will adhere to them throughout, in order that it may serve its readers as preeminently a newspaper of character, from the first word of each issue to the last, and thus increase its rapidly growing power for good.

DOWNTOWN REAL ... DIRECT DONATIONS

"Such patent medicines as these are vipers that ought to be crushed, must be crushed and WILL be crushed. They prosper largely because they are advertised in newspapers, magazines and other mediums. They are advertised because these mediums make money by advertising them. This is a source of revenue which the *News* is only too glad to forego. The day will come when all newspapers, whether they want to or not, will be compelled to do without this blood money."

The *Daily News* explains that it has, in the past, attempted to censor "patent medicine," advertising because it recognized the evils of many "patent medicines." It was not, however, satisfied with the way such censorship worked.

"It is hard to know where to draw the line. More, it is IMPOSSIBLE to know where to draw the line. The *News* has reached the conclusion that the only remedy for the patent medicine evil is not regulation but prohibition—the prohibition of ALL patent medicine advertising. Therefore it takes this step."

Again, we of the medical profession should turn our attention to those publications for which we as a profession are directly responsible—the medical journals. Publishers of medical journals were for years in the same position with respect to proprietary medicine advertisements that the publishers of newspapers are today in respect to "patent medicine" advertisements. They were unable to separate the meritorious from the worthless, the useful from the fraudulent. The medical profession, through its own organization, the American Medical Association, created a body of experts—the Council on Pharmacy and Chemistry—which investigates and reports on the proprietary products that are submitted to the medical profession. The medical journal publisher of today, therefore, is in a position intelligently, fairly and scientifically to censor his advertisements of proprietary products. That in many instances he still refuses to do so is more than a reflection on the good faith of the individual publisher, it is a reproach on the good judgment of the profession which fails to lift its voice in demanding that such censorship be exercised. Once more it must be said, that, to the discredit of the medical profession, the general standard of medical journal advertising is below the standard of advertising in decent newspapers and immeasurably below the standard of advertising in the average high-class lay magazine.

CAUSE FOR OPTIMISM

A Clean Medical Journal—the South Texas Medical Record

The preceding article comparing the advertising standards of lay publications with those of medical journals may seem pessimistic. Fortunately, there are forces at work in the medical profession that make for optimism. An editorial in the last issue—April, 1915—of the *South Texas Medical Record*, the official organ of the South Texas District Medical Association, is especially significant. While not a large journal, the *South Texas Medical Record* could well stand as an example to medical publications of a much more pretentious character. Its advertising pages are above reproach and the journal is a credit alike to its editors and to those members of the profession whose support make its existence possible. In the editorial referred to, entitled, "Honest Advertising—Let us Cleanse Our Own Linen First," the editor-in-chief, Dr. W. Burton Thorning, says:

"A recent editorial, entitled 'Honest Advertising,' in a daily newspaper, furnished the occasion for an editorial comment in the January number of the *Southwestern Hospital Reporter*. The latter, while taking the ground that the newspaper was inconsistent in uttering high editorial sentiments and in adjoining columns printing patent medicine advertisements, implied that newspaper men should be allowed some latitude in the matter of accepting advertising, on the plea of being laymen and therefore not expected to possess the same amount of information concerning patent 'dope' that medical men have.

"It would appear to be a fair assumption that a layman, even though a highly educated and able editor of a great newspaper, does not know, and cannot be expected to know, the depth of depravity to which the consumption cure faker and the cancer quack can descend.

"Granting that the newspaper man accepts the advertisements through ignorance of the facts concerning their possibilities for evil, what can be offered in defense of the medical editor who accepts advertising matter equally pernicious in its influence?

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"Indeed, it is not so many years since many of the so-called ethical medical journals carried the ads of some of the most notorious quacks this country has ever known.

"Doubtless there are few, if any, who do so at the present time, but, on the other hand, there are only a few who do not advertise unethical institutions, and questionable proprietary medicines. As a matter of fact some of the most widely advertised patent medicines of today were formerly advertised as ethical proprietaries in medical periodicals, the great majority of which are still serving as a sort of preparatory school for advertisements that will presently appear in the lay press.

"What shall be offered in defense of the medical publication which continues to publish the advertising matter of hundreds of proprietaries which the Council on Pharmacy and Chemistry of the American Medical Association has shown to be either generally worthless or an out and out fake?

"Can the medical editor plead ignorance? Hardly. To do so would be to admit utter incapacity. There is only one inference to be drawn; the publication needs the money and is not over particular regarding its source.

"There is a remedy, however, a remedy absolutely certain in its results. If every physician in the United States for a period of three months would positively refuse to receive at his desk a medical journal containing questionable advertising, this blotch on medical journalism could be erased.

"It is true that many of them would sink, never to rise again, but the profession would be better off without those whose existence depends upon 'phoney' advertising. There are, unfortunately, several American journals whose reading pages are well and carefully edited and a credit to medical literature, whose advertising pages carry such undesirable matter that the educated physician can only feel a sense of disgust.

"Such journals could very well succeed on the quality of their reading matter and undoubtedly would increase their circulation enough to more than offset the loss in advertising."

Correspondence

The Defervescence in Typhus Fever

To the Editor:—May I add my experience in corroboration of your statement in a recent Current Comment, on this subject (THE JOURNAL, May 15, 1915, p. 1664) that the fever of typhus terminates in a great proportion of cases by lysis and not by crisis? The three typhus epidemics which I observed in Russia have given me sufficient material to support that statement. As a rule, the fever terminates on the twelfth, fourteenth or seventeenth day, the drop in temperature occupying from twelve to seventy-two hours. Even in the rare cases in which the fever ends abruptly, the temperature curve is seldom like the typical curve of lobar pneumonia. It may be worth mentioning that in children in whom the disease is nearly always mild, critical defervescence hardly ever occurs.

G. A. FRIEDMAN, M.D., New York.

Effect on Membership of Removal from State

To the Editor:—I enclose a copy of a resolution which was adopted by the Medical Society of the District of Columbia at a recent meeting, with the request that it be published in THE JOURNAL of the American Medical Association.

A. L. HUNT, M.D., Corresponding Secretary,
Washington, D. C.

Moved, that the Executive Committee recommends to the Medical Society of the District of Columbia the adoption of the following resolutions, with instructions that copies thereof be sent to the delegates, presidents and secretaries of the various state medical associations; that it be printed in the *Washington Medical Annals;* and that a copy be sent to THE JOURNAL of the American Medical Association with request for its publication therein.

WHEREAS, Section 3, Chapter VIII, of the By-Laws of the American Medical Association provides as follows:

Effect on Membership of Removal to Another State: A member who changes the location at which he practices medicine from the state through whose consituent association he holds membership in the American Medical Association to another state in which there is a constituent association is eligible to membership in the component society of his new location upon the presentation of a transfer card and an official statement that his dues have been paid in full in the society in which he holds membership. He shall forfeit his membership in the American Medical Association one year after such change of location, unless he becomes a member of the constituent association of the state to which he has moved. Provided, however, that if the component society into whose territory such member has moved shall refuse him membership, the member shall be privileged to appeal to the Judicial Council of this Association to determine whether or not he be guilty of any act that warrants the enforcement of the provisions of this section. Pending the decision of such appeal, he shall retain his membership in the American Medical Association through his original state association. And provided, further, that the term "the practice of medicine" throughout these by-laws shall be held to mean the offering of service or counsel for the relief of those suffering from abnormal physical or mental conditions. Provided, that nothing in this section shall be construed as exempting any member of the American Medical Association from compliance with the requirements of the civil laws of the state or district into which he may have been removed.

Be it *Resolved*, That the Medical Society of the District of Columbia is opposed to the foregoing section, for the following reasons:

The section is loosely and clumsily worded, and contains provisions of questionable relevancy or practicability. The proviso relating to appeal to the Judicial Council seems meaningless, as it does not appear what "the provisions of this section" are that are to be enforced, or how they are to be enforced. According to the apparent intent, the operation of the section, if enforceable, could have the effect of compelling local and constituent associations against their will to admit members by transfer from other jurisdictions. This method of admitting members by transfer is not contemplated by the procedure prescribed in the constitution of this society, or doubtless in the constitutions of many other state associations; hence the virtual effect of this section is autocratically to override and nullify in this respect these constitutions without the consent of the local associations, and even without consulting them. The adherence to the general plan of organization of the American Medical Association required of the constituent associations cannot be construed as granting unlimited control over local affairs. Absolute, complete and unrestricted control over admission to its own membership is a fundamental right vital to the autonomy of any organization. That three outsiders, however excellent, members of the Judicial Council, should have the appellate power to dictate to the hundreds of members of a constituent association as to the admission of new members is totally repugnant to the approved American principle of local self government. Their familiarity with local conditions and local spirit makes the members of a local association far better qualified to act in their own way on applicants for membership than any outside tribunal; their decision should be final, and it is not likely that material injustice will be done. Furthermore, if the right of the American Medical Association to encroach on local prerogatives and override local constitutions in one matter is conceded, there is not a limit to the autocratic interference with personal and local independence and privileges to which it or its managers might not attempt to lay claim. For the foregoing reasons the Medical Society of the District of Columbia is not disposed to recognize any authority, jurisdiction or power of interference whether on the part of the American Medical Association or its Judicial Council with respect to the admission of members or any other purely local matter. Therefore, be it

Resolved, That the delegate of this society to the American Medical Association is instructed to offer and promote the adoption of some such substitute as the following for the foregoing Section 3, Chapter VIII of the By-Laws, which should amply meet the requirements of the case.

REMOVAL OF MEMBERS.—A member of a constituent association removing from the jurisdiction thereof may remain eligible for membership in the American Medical Association for a period of eighteen months following such removal, after which such eligibility shall cease, unless or until it is reestablished by his becoming a member of the constituent association of the jurisdiction in which he is located.

Strychnin Symptoms After Large Doses of Morphin

To the Editor:—That large doses of morphin may produce symptoms resembling those caused by strychnin can be seen not only from the recent experimental work of Hugh McGuigan and E. L. Ross (THE JOURNAL, May 1, 1915, p. 1494) but also from the following observations. In the *Philadelphia Medical Journal*, March 21, 1903, I published the following record under the title, "Spinal Symptoms Caused by Acute Morphine Poisoning":

A middle-aged man in one of his usual attacks of rheumatic pain from which he had been a sufferer for several years went to a nearby pharmacy for relief. A mixture containing 3 grains of morphin sulphate was given him. He drank over a half of it at once. Half an hour later he suddenly became pale and fell in a semicomatose state. Some clonic contractions in the upper extremities and trismus made their appearance which, however, did not last long. A vomitive was given him before my arrival. I found him pale, covered with perspiration and unable to walk. When forced to take a few steps, spastic paralysis

was evident. The knee-jerks were markedly increased; ankle-clonus and Babinski toe phenomenon were present. Seventeen hours later all symptoms of motor irritability disappeared.

In the *Philadelphia Medical Journal*, March 28, 1903, W. W. Keen, commenting on my communication, reports his own experience with morphin. In 1866, he says, he had a severe attack of insomnia. In desperation one night he took one-quarter grain of morphin and repeated the dose in an hour. He not only did not sleep, but an hour or two later he walked with a spastic gait. When he accidentally struck his knee against an article of furniture in the room in the dark, instantly a spasm closely resembling a strychnia spasm was produced.

ALFRED GORDON, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SERUMS AND VACCINES IN ERYSIPELAS

To the Editor:—What is the consensus of opinion of the medical profession as to the serum treatment of erysipelas. What is the dosage and how often given? Have any bad results occurred? Please sign initials only. E. R. S.

ANSWER.—Antistreptococcus serum has been used in erysipelas with apparently good results in some cases. But as Kolmer says (Infection, Immunity and Specific Therapy), "with very indifferent results." Erdmann (Reference Handbook of the Medical Sciences, iv, 89) states: "Marmorek's and other antistreptococcus serums have failed. Autogenous and stock vaccines made from erysipelas streptococci demonstrated no efficiency in a series of ninety-five of my cases so treated." The general opinion seems to be that the evidence as to the usefulness of these serums is not convincing. However, Ashurst (Principles and Practice of Surgery) says: "Antistreptococcic serum is harmless and, if possible, should be administered in all severe cases." The treatment by vaccines was inefficient in the hands of Erdmann, but some authors have thought it useful. Maynard Smith (System of Treatment, edited by Latham and English) says: "Its results have been very promising and it is likely to form the most reliable means at our disposal. In severe cases an initial dose of 10 millions of the dead organisms is given. On the following day another dose of 10 millions is administered if there is improvement in clinical manifestation; if not, a smaller dose of 5 millions is given."

The treatment with vaccines must be regarded as still on trial.

LITERATURE ON SCOPOLAMIN

To the Editor:—Please give me information as to the physiologic action and therapeutic indications of scopolamin, and some literature on the subject. MORRIS SCHOTT, M.D., Cleveland.

ANSWER.—The following is a list of articles dealing with scopolamin:

Hatcher, Robert A.: Scopolamin and Morphin in Narcosis and in Childbirth, THE JOURNAL, Feb. 5, 1910, p. 446; Feb. 12, 1910, p. 516.

Morphin and Hyoscin (Scopolamin) in Labor, Queries and Minor Notes, THE JOURNAL, June 7, 1913, p. 1814.

Scopolamin in Obstetrics, Queries and Minor Notes, THE JOURNAL, Aug. 31, 1912, p. 758.

Franck: Case of Addiction to Scopomorphin, *München. med. Wchnschr.*, April 2, 1912.

Scopolamin (Hyoscin) and Morphin as an Anesthetic, Therapeutics, THE JOURNAL, Dec. 16, 1911, p. 1995.

Langer, H.: Scopolamin Solutions Do Not Keep Well and Should Be Made Fresh, *Therap. Monatsh.*, February, 1912.

Brunner, F.: Be Cautious with Scopolamin, *München. med. Wchnschr.*, Jan. 16, 1912; abstr., THE JOURNAL, Feb. 24, 1912, p. 598.

Morphin and Scopolamin, Practical Pharmacology, THE JOURNAL, Feb. 13, 1915, p. 588.

Mueller, F. H.: Disadvantages of Use of Scopolamin in Treatment of Morphin Addiction, *Berl. klin. Wchnschr.*, April 21, 1913; abstr., THE JOURNAL, May 31, 1913, p. 1748.

Brustlein: Be Cautious with Scopolamin, *Cor.-Bl. f. schweiz. Aerzte*, April 1, 1912.

Zimmermann, R.: Case of Scopolamin Poisoning, *München. med. Wchnschr.*, Feb. 20, 1912.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, July 6. Chairman, Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, July 6. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, July 6-7. Sec., Dr. John Wix Thomas, Phoenix.

CALIFORNIA: San Francisco, June 15-18. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

DELAWARE: Dover and Wilmington, June 15-17. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Jacksonville, June 15-16. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

GEORGIA: Atlanta and Augusta, June 2-4. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, June 24-26. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Iowa City, June 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 8-10. Sec., Dr. H. A. Dykes, Lebanon.

KENTUCKY: Louisville, June 8-10. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, June 3-5. Sec., Dr. E. L. Leckert, 716 Maches Bldg., New Orleans.

MAINE: Augusta, July 6-7. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MARYLAND: Baltimore, June 21. Sec., Dr. J. McP. Scott, Hagerstown.

MARYLAND: Homeopathic, Baltimore, June 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

MICHIGAN: Ann Arbor, June 8-10. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 1-4. Sec., Dr. Thomas McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, June 15-16. Sec., Dr. E. H. Galloway, Jackson.

MISSOURI: St. Louis, June 21-23. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEBRASKA: Lincoln, June 10-11. Sec., Dr. H. B. Cummins, Seward.

NEW HAMPSHIRE: Concord, July 6-7. Regent, Mr. H. C. Morrison, Concord.

NEW JERSEY: Trenton, June 22-23. Sec., Dr. H. G. Norton, 429 E. State St., Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 29-July 2. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

NORTH CAROLINA: Greensboro, June 8. Sec., Dr. H. A. Royster, Raleigh.

NORTH DAKOTA: Grand Forks, July 6-9. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, June 8-11. Sec., Dr. George H. Matson, Columbus.

OREGON: Portland, July 5. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, June 1-3. Sec., Dr. Nathan C. Schaeffer, Harrisburg.

RHODE ISLAND: Providence, July 1. Sec., Dr. Gardner T. Swarts, State House, Providence.

SOUTH CAROLINA: Columbia, June 8. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TENNESSEE: Memphis and Nashville, June 25, 26. Sec., Dr. A. B. De Loach, 426 Scimitar Bldg., Memphis.

TEXAS: Austin, June 22-24. Sec., Dr. M. P. McElhannon, Belton.

UTAH: Salt Lake City, July 5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VERMONT: Burlington, July 1-3. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 22-25. Sec., Dr. J. N. Barney, Fredericksburg.

WASHINGTON: Seattle, July 6. Sec., Dr. G. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Milwaukee, June 29-30—July 1. Sec., Dr. J. M. Beffel, 3200 Clybourn St., Milwaukee.

Maine March Report

Dr. Frank W. Searle, secretary of the Maine State Board of Registration of Medicine, reports the written examination held at Portland, March 9-10, 1915. The total number of subjects examined in was 10; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 16, of whom 13 passed and 3 failed. One candidate was licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Medical School of Maine		(1913)	81
College of Physicians and Surgeons, Baltimore		(1911)	76
Maryland Medical College		(1909)	81
College of Physicians and Surgeons, Boston		(1913)	88
Harvard University		(1912) 91; (1913) 80;	(1915) 84
Tufts College Medical School		(1911) 79;	(1913) 80
New York Homeo. Med. Coll. and Flower Hospital		(1914)	85
University and Bellevue Hospital Medical College		(1906)	77
University of Tennessee		(1912)	91
University of West Tennessee		(1913)	78

FAILED		
Eastern University*	(1913)	65
College of Phys. and Surg., Boston	(1909) 77†; (1912)	69

* This college is officially reported as not recognized by the Maryland State Board of Medical Examiners.

† Conditioned in one subject.

LICENSED THROUGH RECIPROCITY College	Year Grad.	Reciprocity with
Boston University	(1906)	Vermont

Arizona April Report

Dr. John Wix Thomas, secretary of the Arizona Board of Medical Examiners, reports the written examination held at Phoenix, April 6-7, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, of whom 3 passed, including 1 osteopath, and 4 failed, including 1 osteopath. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Rush Medical College	(1914)	80.4
University of Vienna, Austria	(1910)	77.8
FAILED		
University of the South	(1897)	45.5
Vanderbilt University	(1914)	73.4
National School of Medicine, Mexico	(1910)	43.6

Book Notices

THE TUBERCULOSIS NURSE. Her Function and Her Qualifications. A Handbook for Practical Workers in the Tuberculosis Campaign. By Ellen N. La Motte, R.N., Graduate of Johns Hopkins Hospital. Introduction by Louis Hamman, M.D., Physician in Charge Phipps Tuberculosis Dispensary, Johns Hopkins University. Cloth. Price, $1.50. Pp. 292. New York: G. P. Putnam's Sons, 1915.

This book deals with the tuberculosis situation in Baltimore. It details the problems that have presented themselves in that city, how they have been solved, and how an effective nursing staff has been built up, first under private and later under municipal control. The situation in other cities and countries is not considered. This, however, in no way detracts from the value of the book. The author believes that only graduates of first-class general hospitals should be employed as visiting tuberculosis nurses, and advises strongly against employing women who have apparently recovered from the disease. In Baltimore the applicant for a position in this service is required to submit to examination by a specialist; a certificate of health from her family physician is not accepted. The hardships and difficulties in the work are considered and the necessity for education of patients and their families. The social and economic aspects of tuberculosis relief work are considered at some length. The author believes that the social service worker has an important place in this work, but calls attention to the fact that some social workers try to do their own and every one else's work as well. "All social workers should learn where to stop—where to transfer the case to some one else better fitted to deal with another phase of it."

TRANSACTIONS OF THE FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE. Five Volumes. Paper. 1913.

The Fourth International Congress on School Hygiene held at Buffalo, Aug. 25 to 30, 1913, was admittedly one of the most successful of international conferences on this subject. The Transactions fill five large volumes and contain a large amount of valuable material that will be utilized by all those interested in any aspect of the school hygiene field. Specific mention of the many valuable papers presented is impossible on account of their great number. The five volumes form a mine of valuable material that will justify the careful study of all those interested in school hygiene. The program includes practically every phase of school hygiene, so that the teacher, the physician, the school inspector, the local health officer and the school superintendent can all find much material of interest. Paradoxical as it may seem, perhaps the most pertinent criticism that can be made on the Transactions is that they are too complete. Their very bulk is appalling and prevents one from finding many things that would doubtless be of value. While custom has sanctioned the habit of including in transactions of these congresses practically everything that has any connection with the case, there are some of these customs which would be far more honored in the breach than in the observance. For instance, it is difficult to understand why volumes of transactions should contain many pages of names of committees, delegates, exhibitors, etc., why space should be given to such purely conventional utterances as the perfunctory addresses of welcome delivered by mayors and governors and to equally perfunctory responses thereto. What object is there in printing in transactions, issued months after the congress, such transient matters as reports of entertainment, reception and transportation committees, lists of hotels with rates, etc.? The editorial blue pencil, if liberally used, would have reduced the five volumes of Transactions to one or two and would greatly have increased the value of the surviving material. These international congresses are undoubtedly of great value, and the material presented is in the main thoroughly worthy of preservation; but there would be less likelihood of such Transactions reposing undisturbed on library shelves if the enthusiasm of those responsible for the preparation of these Transactions were somewhat tempered by discrimination.

URINARY ANALYSIS AND DIAGNOSIS BY MICROSCOPICAL AND CHEMICAL EXAMINATION. By Louis Heitzmann, M.D. Third Edition. Cloth. Price, $5 net. Pp. 345, with 131 illustrations. New York: William Wood & Co., 1915.

In the present revision, "the aim has again been to increase and improve the first part on chemical examination and to incorporate in it all the simpler methods and tests which have proven of value." With few exceptions the more complicated tests have been omitted. As in the former editions, special emphasis is laid on the microscopic examination and its importance in diagnosis. While there is no question that a careful study of the urinary epithelia may often lead to presumptive, and occasionally to an absolute differential diagnosis, it seems likely that Heitzmann has taken too radical a position regarding the importance of the epithelia in diagnosis. The sections dealing with these points are especially complete and worthy of careful attention by the reader. This well-known book, while not so complete as could be desired with reference to the chemical examination of the urine, is, nevertheless, adequate for all who do not wish to undertake the more detailed special examinations. Its chief value lies in its thorough presentation, both in the text and in the excellent original illustrations, of the microscopic characteristics of the urine and, especially, of the value of such examinations in differential diagnosis.

DIE FÄZES DES MENSCHEN IM NORMALEN UND KRANKHAFTEN ZUSTANDE MIT BESONDERER BERÜCKSICHTIGUNG DER KLINISCHEN UNTERSUCHUNGSMETHODEN. Von Prof. Dr. Ad. Schmidt, Geh. Medizinalrat, and Prof. Dr. J. Strasburger, Ordentl. Professor der Inneren Medizin. Fourth Edition. Paper. Price, 22 marks. Pp. 444, with 31 illustrations. Berlin: August Hirschwald, 1915.

Since the appearance of the former edition of this authoritative work, investigation of the feces has become more complex. For this reason the additions to the text and bibliography have been numerous. Especial attention should be directed to the section on the micro-organisms of the feces, as herein may be found a clear discussion of the occurrence and differentiation of the various types of bacteria which are observed in the intestinal tract both in health and disease. The section dealing with the chemical analysis of the feces is also particularly complete, and should lead the worker to a much more complete technic than is usually employed. This work may be recommended to the laboratory worker who has occasion to examine and study the feces, and to the general practitioner who may desire to obtain a better understanding of methods of study, as well as of the proper interpretation of the analytic findings in this much neglected field.

Medicolegal

Making a Public Nuisance of Milk Pasteurization—Criminal Intent

(People vs. Borden's Condensed Milk Co. (N. Y.), 151 N. Y. Supp. 547)

The Supreme Court of New York, Appellate Division, Second Department, affirms a judgment holding the defendant guilty of having committed the crime of maintaining a public nuisance in its method of pasteurizing milk. The court says that the defendant claimed that all the acts or omissions charged against it were merely incidental to the process of "pasteurization," and that therefore its acts or omissions had statutory sanction and could not be considered as constituting a public nuisance in a legal sense. It may be granted at once that the ordinance of the board of health had the force of a statute, for the Greater New York Charter so provides. But this ordinance did not purport to prescribe nor to authorize any detail in the act of "pasteurization," such as was charged against the defendant in this proceeding. It did require "pasteurization" generally, but it is very far-fetched to think that this requirement authorized, much less directed, the making of unnecessary noises in the very early hours of morning, either within or without the defendant's plant, and to the great annoyance of the residents of the neighborhood. The defendant urged further that the judgment was reached by ignoring the necessity of proving a criminal intent on the part of the defendant, and that therefore it was based on a substantial error of law. What is meant by the phrase "criminal intent," within the scope of the definition of the crime of maintaining a public nuisance? It does not mean that one who is charged with the commission of that offense should be shown to have consciously and positively intended to interfere with the comfort and repose of "any considerable number of persons." His criminality is independent of any positive purpose of annoyance. It can arise as well from his very failure to think of anybody but himself, and, generally, public nuisances, whenever and wherever they exist, arise from just such self-concentration. The acts involved here were so continuous and persistent as to indicate on the part of the defendant's employees a complete indifference to the rights of others and, as to the crime now under consideration, to establish a "criminal intent" within the meaning of the law.

Injury to Previously Injured Person—Distinction Between Hypothetical and Other Questions

(Blake vs. City of Bedford (Ia.), 151 N. W. R. 74)

The Supreme Court of Iowa affirms a judgment for $2,750 in favor of the plaintiff, a man about 60 years old, who was injured on a defective sidewalk more than nine months after he had been injured by a fall from a ladder. The court says that the fact that the plaintiff had sustained a prior injury was of course material, but it constituted no defense to this action, if he succeeded in showing to the jury, that, by reason of the defendant's negligence with respect to its sidewalk, he was made to fall, without fault on his part, and thereby received other or additional or increased injury. A physician who was shown to have personally examined and treated the plaintiff for his injuries was asked for his opinion whether a union, bony or fibrous, of the broken bone had taken place prior to the plaintiff's fall on the sidewalk. In this question the witness was asked, among other things, to speak from his examination and observation of the patient. It was urged that the witness should not have been allowed to answer until he had first detailed to the jury all that he had learned or discovered in his examination and treatment of the patient. But such is not the rule. If a witness is testifying purely as an expert, pronouncing an opinion solely on a hypothetical state of facts, then of course it is the right of the opposing party to insist that the question shall disclose all the facts on which the opinion is to be pronounced. But, if the witness be a physician who professes to speak from his personal observation, examination, and treatment, he may properly express an opinion based thereon, it being, of course, the privilege of counsel on the other side, by cross-examination, to test its accuracy and reasonableness.

Information Not Obtained for Purpose of Treatment Is Not Privileged

(Cherpeski vs. Great Northern Railway Co. (Minn.), 150 N. W. R. 1091)

The Supreme Court of Minnesota, in reversing a judgment obtained by the plaintiff for personal injuries, holds that it was error to exclude the testimony of two physicians called as witnesses by the defendant. One of them was a physician and surgeon of the Northwestern Road. The defendant proposed showing that the plaintiff went to him and was examined for the purpose of ascertaining whether he could enter the service of the road. The other physician was the general surgeon of the defendant. The plaintiff, according to the offered proof, went to him to ascertain whether he was physically able to remain in the service of the company. In neither case was curative treatment contemplated. In neither case did the physician obtain information to enable him to prescribe or act for the plaintiff. Objections to the proposed testimony were sustained on the ground that the information sought was privileged. But from the showing made or offered to be made the court thinks it affirmatively appeared that the information obtained by the two physicians was not privileged. At common law communications between physician and patient or information obtained by the physician in treating his patient were not privileged. The privilege comes from the statute.

Injury from Negligently Cutting Through Bandage—Care Required in Public Dispensary

(Volkell vs. Wolf (N. Y.), 151 N. Y. Supp. 918)

The Supreme Court of New York, Appellate Term, First Department, which affirms a judgment in favor of the plaintiff, amount not stated, says that the defendant, a surgeon, operating in a dispensary, inflicted an injury on this infant plaintiff while cutting through a bandage in which the child's broken arm was wrapped. The defendant claimed that, if the bandage had been adjusted properly and in the usual fashion, the patient's hand would have been fastened tightly to the body and in no danger of being cut. He admitted that before cutting he made no examination to ascertain where the hand was, or what was concealed under the point where he applied the shears, claiming that "he had a right to assume that it (the bandage) was properly put on; also that, "I think the whole hand was exposed, but I did not see it; I had the impression that the bandage was outside of the upper part;" also that it was merely good fortune that the infant's hand was not cut off. The hurry of work in a public dispensary does not excuse the lack of ordinary care. The defendant could not assume that the hand was in a safe position, and rely on that, when the fact could be readily ascertained by himself before applying the shears. The finding of negligence was warranted by the evidence.

What Constitutes Removal of Hand at Wrist

(Moore vs. Aetna Life Insurance Co. (Ore.), 146 Pac. R. 151)

The Supreme Court of Oregon affirms a judgment for the plaintiff, where the question was disputed as to whether his hand had been removed at the wrist. The court says that the question was one of extreme nicety, and there is a dearth of decisions covering the exact point, there being no case cited by counsel or discovered by the court involving the construction of a policy exactly identical in its terms with the one on which this action was predicated. This was an action to recover on an accident insurance policy, which provided that the plaintiff should be entitled to recover $1,000 if he should suffer accidental injuries resulting in the "loss of a hand by removal at or above the wrist." The plaintiff was accidentally shot in the hand, necessitating the removal of all the bones of the hand at the wrist except the metacarpal bone of the thumb. From the medical testimony, which was meager, and photographs taken about the time of the trial, it appears that the amputation began at the inner side of

the left wrist, removing probably a small portion of the unciform bone, and including in the operation all the metacarpal bones of the four fingers at their articulation with the unciform, os magnum, and trapezoid, respectively. The os magnum, trapezoid, and trapezium were clearly left intact, and the bones of the thumb, while possibly injured by the shot, retained their continuity. The thumb itself was not removed, although the ball of that member was partially destroyed and the ligaments so injured that it was stiff and entirely useless. The medical witness stated that in his opinion it would have been better to have removed what remained of the thumb, so that the plaintiff could have had an artificial hand. There was enough of the flesh of the hand to cover the bones of the wrist, forming what the medical witness termed "a bunch of hardened callus" at the end of the wrist, probably no more than good surgery would require for the protection of the bones of the wrist. The court is of the opinion that the plaintiff was within the true meaning and spirit of the policy. He had a good hand against losing the use of which he desired to insure. If he had been told the intent and meaning of the policy was such that if in case of a necessary amputation the surgeon should leave some useless shred of his hand to be a source of annoyance and inconvenience, and thereby his policy would be practically worthless, does any sane person believe for a moment he would have taken out the policy? The substance of what he sought was insurance against the possible loss of his hand as a useful member of his body. Substantially he lost his hand by removal at the wrist.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, SAN FRANCISCO, JUNE 21-25.

American Academy of Medicine, San Francisco, June 25-28.
American Climatological and Clin. Association, San Francisco, June 18-19.
American Laryngological Association, Niagara Falls, June 1-3.
American Laryn., Rhin. and Otol. Society, Chicago, June 15-16.
American Ophthalmological Society, New London, Conn., July 6-7.
American Otological Society, Niagara Falls, June 3-4.
American Society of Tropical Medicine, San Francisco, June 14-16.
American Surgical Association, Rochester, Minn., June 9-11.
Arizona Medical Association, Prescott, June 17-18.
Maine Medical Association, Poland Springs, June 9-10.
Massachusetts Medical Society, Boston, June 8-9.
Montana State Medical Association, Bozeman, July 14-15.
Nat'l Assn. for the Study and Prev. of Tuberculosis, Seattle, June 14-16.
Nevada State Medical Association, Reno, June 17-19.
New Jersey Medical Society, Spring Lake, June 22-24.
North Carolina State Medical Society, Greensboro, June 16.
Rhode Island Medical Society, Providence, June 3.
Washington State Medical Association, Tacoma, July 20-22.

AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION

Eighteenth Annual Meeting, held at Baltimore, May 10, 1915

The President, DR. JOSEPH C. BLOODGOOD, in the Chair

Benign Growths of the Stomach

DR. SEYMOUR BASCH, New York: Only the genuine new growths are considered. They include mucous polypi, adenomas, lymphadenomas, myomas, fibromas, lipomas, myxomas, osteomas and cysts. When the mucous membrane is not involved and there is no obstruction from the growth, normal conditions of the gastric secretion should prevail.

DISCUSSION

DR. JACOB KAUFMANN, New York: A patient whom I had occasion to see several times with her physician, a girl, suffered from her fourteenth to her nineteenth year with repeated gastric hemorrhages of very severe type, occurring shortly before menstruation. Roentgenograms made on two occasions showed the characteristic picture of penetrating ulcer of the duodenum. At operation, the duodenum and pyloric part of the stomach were found normal, but fibroma was discovered at its cardiac end. The mucous membrane around it was quite congested, and when the tumor was handled, a profuse hemorrhage was produced. I think we have every reason to pronounce this a true case of menstrual bleeding from the stomach.

DR. HENRY W. BETTMANN, Cincinnati: A man, now about 50 years of age, has suffered for fifteen years with pain and hyperacidity of the stomach. Nine years ago, an operation was done, and the whole mucous membrane was found covered with small polyadenomas. We did nothing but sew up the stomach again. He will probably go on for the rest of his life suffering from the same symptoms. The supposed rarity of these cases may be due to the fact that we have failed to put isolated cases of this character on record.

DR. JOHN A. LICHTY, Pittsburgh: I should like to ask Dr. Basch whether he relies largely on the Roentgen ray in making the diagnosis. The slides he has exhibited seem to show a rather large shadow. In cases of small polypi, however, I can hardly see how the Roentgen ray would help.

DR. SEYMOUR BASCH, New York: The Roentgen ray is a distinct advance in the diagnosis of borderline cases. Roentgenograms show not only a distinct shadow defect caused by the penetration of the tumor into the bismuth, but also a notched appearance.

The Cause of the Variations in the Gastric Hunger Contractions with Age

DR. T. L. PATTERSON, Baltimore: By starving young and old animals, it is possible to show that in very young dogs the contractions of the empty stomach are practically continuous, while in old animals there is a decrease in the gastric hunger activity proportional to the advance in age. Gastric hunger variations appear in the gastric tonus, in the strength and rapidity of the hunger contractions, and especially in the duration of the hunger and quiescence periods of the stomach, the cause of which is produced by two differentiated factors, namely, age and rate of metabolism. The gastroneuromuscular apparatus is independent of the central nervous system. In prolonged starvation, the hunger sensation may be lost, while the hunger contractions persist.

DISCUSSION

DR. LUDWIG W. KAST, New York: Is there any relation between the hunger contractions and the gastric secretion?

DR. JOSEPH C. BLOODGOOD, Baltimore: In these experiments, did Dr. Patterson differentiate between the different groups by restricting all food and liquid in one group, and restricting food alone in the other? If so, I should like to know whether there was any difference in the contractions when the animals had all the water they wanted.

DR. T. L. PATTERSON, Baltimore: Regarding the relation between the gastric hunger contractions and the gastric secretion, anything that comes in contact with the gastric mucosa will inhibit the gastric hunger contractions at once whether it be water or food. The hunger contractions do not seem to have much effect on the gastric secretion. All the animals had free access to water, but had no food.

The Effect of Certain Gastric Conditions on the Salivary Secretion

DR. T. R. BROWN, Baltimore: Our studies show that the chewing of bland substances produces a considerable flow of saliva, which is quite rich in diastatic ferment. A comparison of normal cases with cases in which there was increased, diminished or absent hydrochloric acid showed that there were no variations from the normal in respect to quantity, alkalinity or diastatic ferment content of the saliva sufficiently great to make us feel that there is any definite relationship between the character of the gastric juice and that of the saliva. It does not appear probable that quantitative or ferment changes in the saliva play any considerable part in the development of the glossitis, gingivitis or stomatitis, so frequently met in a case of achylia gastrica.

DR. E. B. FREEMAN, Baltimore: In one of our cases of achylia due to carcinoma of the stomach, the diastase test was positive, and also in a case of hyperacidity, there being a large amount of diastase present in both cases.

DISCUSSION

Dr. G. C. Mizell, Atlanta, Ga.: It has seemed to me that during the last five years there has been a marked increase in the number of cases of hyperchlorhydria and achylia gastrica in patients in the South presenting themselves for treatment of gastro-intestinal disturbance. I have not found any relationship between the gastric and the salivary secretion. I have tested for the ferments, and have not found them absent in any of the cases.

Dr. Max Einhorn, New York: I think that achylia gastrica is more frequent in patients coming from the South than in Northerners, but cannot say whether it is on the increase. In fact, it would not be easy to tell, because formerly we did not know much about achylia.

Dr. John A. Lichty, Pittsburgh: I have always been accustomed to attribute the dryness of the mouth and the glossitis that we usually find in cases of achylia gastrica to that condition. I have found that patients with malignant disease of the stomach complain frequently of an increase of saliva. I have recently come to the conclusion that this occurs only in those cases of carcinoma in which the growth is near the esophageal opening.

Dr. Jacob Kaufmann, New York: The difficulty I have found is in examining the saliva, which is a very complicated secretion. It is composed of secretions of different glands. It is a question whether, in examining the saliva, it is sufficient to examine for alkalinity and different ferments.

Dr. Ludwig W. Kast, New York: There are two points that interested me particularly. One is the fact that mechanical stimulation of the salivation brings about secretion from the parotids. The other point is the relationship between the nutritive or inflammatory changes in the tongue and the mucous membrane of the mouth and conditions of the stomach. Achylia gastrica may be secondary to disturbances in the mouth.

Dr. Charles D. Aaron, Detroit: In cases of pernicious anemia in which there is achylia gastrica, we usually find a glossitis. The subsidence of glossitis with the giving of hydrochloric acid leads one to believe that there is some connection between the stomach and the trouble in the mouth.

Dr. Joseph C. Bloodgood, Baltimore: During the last year I have been especially interested in a group of cases in which the tongue showed a peculiar lesion that I was at first afraid might be cancer. Of 100 cases of cancer of the tongue, however, only three were in women; but this lesion seems to be just as frequent in women as in men. It is often associated with achylia. It occurs in the middle of the tongue, from base to tip; but I have never seen cancer, except at the tip.

Dr. E. B. Freeman, Baltimore: In both cases, the carcinoma was along the lesser curvature, and probably primary.

Dr. T. R. Brown, Baltimore: We had the patient chew a piece of rubber tubing of definite size for twenty minutes, and this brought about secretion. I am quite sure that glossitis and gingivitis are more prevalent in benign than in malignant achylia. The hyperacidities and the achylias showed about the same degree of secretion. I do not believe that there is much relation between gastric and salivary secretion, but it is probable that there is a relation between the salivary and the pancreatic.

Recent Studies in Pancreatic Secretion

Dr. Max Einhorn, New York: I have examined a number of normal persons by means of the agar-tube method, in order to find the standard content of amylopsin, steapsin and trypsin in the pancreatic juice. Boiled milk and unboiled milk were used in examining both the gastric and the pancreatic secretions. Each ferment should be examined separately, because if one ferment is found high, the others are not always high in proportion. By the amount of change found in the tube after twenty hours, one can estimate approximately the amount of the ferment examined that is present.

DISCUSSION

Dr. T. R. Brown, Baltimore: An interesting point is the variation in the amount of the different ferments according to the pabulum given.

Dr. Franklin W. White, Boston: It seems to me that some of the variation in the amount of the ferment tests may be due to the technic of the ferment test, which is certainly not simple or altogether satisfactory. I think the proteolytic ferment, the trypsin, is more valuable for diagnostic purposes than either the amylase or the lipase.

Dr. Jacob Kaufmann, New York: Usually these examinations are made with the patient in a fasting condition. It is a question whether, if the tube is introduced into the duodenum before the meal is given, it gives one an opportunity to tell how the pancreas secretes.

Dr. Clement R. Jones, Pittsburgh: In a case in which the feces contained large fermented curds, this seemed to me to demonstrate a lack of balance between the pancreatic and other intestinal secretions. The condition was controlled by administering sodium citrate in the milk, thus splitting up the curds.

Dr. Max Einhorn, New York: The tubes spoil after being kept more than two or three months; but if kept on ice, they last very well for five or six weeks. I have made the examinations with the patients in a fasting condition or after taking tea and sugar. If solid food is given, the tube will block up; but any liquid food may be given. The results obtained in a fasting condition were the same as those after taking tea and sugar.

Surgical Physiology of the Colon

Dr. William Draper, New York: The influence of heredity and environment on the functional abnormalities of the human colon is great, and these fundamental biologic factors are worthy of further consideration. To attribute pathologic conditions of the colon to any single factor is a grave error, as isolated deficiencies may be compensated for. Many complicated factors go to maintain the balance. No matter how severe the derangement within the bowel, so long as balance is maintained, the body is protected. When the defensive power is weakened, the symptoms immediately arise.

DISCUSSION

Dr. Treby Lyon, New York: From personal experience, I can say that after solidification of the feces, which occurs in six weeks, there is so little discomfort after ileostomy compared with the relief afforded by the cessation of the symptoms that I should unhesitatingly advise its employment in severe cases of inflammation of the colon.

Dr. J. M. Lynch, New York: Dr. Lyon came under my care three years ago, suffering from diarrhea alternating with constipation, loss of weight, and the passage of blood and mucus. The methods of treatment previously tried by him had proved of little use, and I suggested treating the polyposis, which is usually associated with inflammation of the colon, by putting the colon at rest by means of complete ileostomy, which was done. In seven other cases as well the patients had free movements after a short time. There is perhaps a little more discomfort from an ileostomy than from a colostomy, but very little; and all the patients had gained in weight. Dr. Lyon practices his profession, and very few people in his town know that he has an opening in his side. There are no tumors remaining now, so far as we can see.

Dr. J. C. Bloodgood, Baltimore: I think we have had a pretty good demonstration that side-tracking of the colon with an artificial anus near the cecum is by no means an unbearable condition.

Dr. Seymour Basch, New York: Was the inflammation in Dr. Lynch's cases primary, and the polyposis secondary, or was it an infectious process?

Dr. Willy Meyer, New York: Was the colon side-tracked for the purpose of avoiding the irritation from the feces or for the sake of irrigation of the colon? It is important for physicians and surgeons to find out whether this radical treatment is always necessary.

Dr. Joseph C. Bloodgood, Baltimore: When we side-track the colon by bringing out the ileum, there will be a difference in the irritative character of the effect of the fecal flow on

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the surrounding skin in relation to the condition of the colon before the operation. If it has been diseased to such an extent that the ileum has taken up the function of the colon, we may find no irritation and normal stools, as in this case. When, however, the ileum is functionating normally, we may have trouble, as in my last case.

DR. J. M. LYNCH, New York: I have never performed an ileostomy on a person with a practically healthy colon, so I cannot say how its contents would flow from the ileum in these circumstances. I do not know that we ever have polyposis with a simple or catarrhal inflammation. I believe that the polyposis is secondary to the inflammation.

Study of Carbohydrate Cures in Diabetes Mellitus

DR. JOHN C. HEMMETER, Baltimore: Diabetes mellitus is a disease the pathogenesis of which has involved every organ of the body except the heart and lungs, and the chief cause of which is an affection of the islands of Langerhans in the pancreas. My personal observations were made under quantitative controls of the blood, stools and urine. The method for determining the amount of sugar in the blood is one within the reach of every general practitioner. It is the Ivar Bangs method of quantitative estimation. We must differentiate between the disappearance of sugar from the urine and increased carbohydrate tolerance. A human being cannot live without sugar, so we cannot entirely withhold it; but we can give a kind that is not converted into glycogen, but goes into the circulation direct, such as the oatmeal inosit and hediosit sugar.

DISCUSSION

DR. JOHN A. LICHTY, Pittsburgh: So far as the method of Bangs is concerned, I do not believe that it will help us clinically until there has been further study. There must be more sugar at some times during the day than at others, according to the times of taking food and taking exercise. I did not see much difference in the patients to whom I fed hediosit. I have recently tried Allen's method of treatment in nine cases with very good results.

DR. MAX EINHORN, New York: In some cases, which I have studied, the ferments may be normal; in some, there is hypersecereetion of the pancreas; and in others, there is too little secretion. The external secretion may be changed in different ways.

DR. CHARLES O. STOCKTON, Buffalo: There is no doubt that in the majority of severe cases, the patients may be made sugar-free, and even free from the presence of acetone bodies in the urine, by this method; and that we may establish a higher and higher carbohydrate balance; but occasionally we find a patient in whom we cannot raise the carbohydrate tolerance above about 30 gm., and who may easily lose even that. These unsuitable cases will do better on certain forms of carbohydrate than on others.

DR. LUDWIG W. KAST, New York: What the general practitioner wants to know is how much of all these studies in regard to these different forms of carbohydrate lends itself to direct practical application.

DR. JOHN C. HEMMETER, Baltimore: You must try to increase the weight of the patient, without trying to get him sugar-free. A little sugar does not matter, if his carbohydrate tolerance is increasing. After this treatment, which has an effect on the islands of Langerhans, the patient can stand bread and starch better.

The Value of Rectal Alimentation

DR. HARRY ADLER, Baltimore: The usual method of rectal feeding is unsatisfactory. The drop (Murphy) method, with peptonized milk and sugar solution, is markedly less annoying. In our experiments, the largest amount of nitrogen that we were able to supply daily was 8.9 gm., of which 8.06 gm. was returned with the stools. According to the observations of Dr. Muller, the stools of individuals taking absolutely no nourishment contain 0.2 gm. per diem. With this deducted from our estimations of the returned nitrogen, we have in no case observed an absorption of more than 50 per cent. of the protein supplied; and it has fallen to as low as 30 per cent. The average amount of nitrogen absorbed in these cases was 1.14 gm. per diem. When we compare the amount of nitrogen lost by these cases with the amount that it was possible for them to absorb by colonic feeding, we realize how little we can accomplish. The difference between nutritional enteroclysis and normal salt enteroclysis is little over one-tenth of the tissue albumin loss per diem; over the periods of time that rectal feeding is usually carried out, it is, from a practical standpoint, an almost negligible quantity.

DISCUSSION

DR. JACOB KAUFMANN, New York: Some of the nitrogen found in the stools is derived from the secretions, and this constitutes a possible source of error in making the estimations. I do not think that there is absolute proof of the uselessness of nutrient enemas.

DR. MAX EINHORN, New York: We should try to give glucose by rectum, as it is the best material.

DR. FRANKLIN W. WHITE, Boston: I think it is valuable to contrast with this piece of work done by Dr. Adler the fact that nitrogenous equilibrium can be maintained by duodenal feeding. You can get it all in by the duodenum, but not by the rectum.

DR. LOUIS M. GOMPERTZ, New Haven, Conn.: In some experiments that we conducted, a few years ago, it was found that the rectum is capable of salt absorption to about the same degree as the stomach. Experiments were also made with various other solutions. While I believe rectal feeding to be a pure makeshift, half a loaf is better than none. The use of salt solutions, water and dextrose solutions will tide the patients over the critical period required for rectal feeding.

DR. JOHN C. HEMMETER, Baltimore: I should like to know whether the calculation that you can supply only one-tenth of the nitrogen required by colonic feeding was based on the metabolism experiments made during rest or during activity. During rest, the food taken is entirely used in keeping up the heat of the body, which can be done without food, by artificial means.

DR. HARRY ADLER, Baltimore: The patients were absolutely at rest, in bed, or they could not have been fed by the drop method. We could supply only one-tenth of the amount needed when at rest. It is impossible to estimate accurately the absorption of sugar. We cannot give large amounts of milk by the drop method, because the rectum soon becomes irritated. We gave 8 ounces at a feeding, and gave three feedings a day.

Duodenal Ulcer with Especial Reference to Its Roentgen-Ray Diagnosis

DR. R. WALTER MILLS, St. Louis: The object of the paper is to review certain clinical findings in duodenal ulcer in their relation to clinical teaching and experience. The observations are founded on a series of thirty operatively confirmed cases of duodenal ulcer and eighty cases so diagnosed and treated medically, in which both clinical and Roentgen-ray findings were characteristic of duodenal ulcer, including six with a history of hemorrhage. We may conclude that the greater efficiency of controlling alkalies in duodenal ulcer as compared with gastric ulcer is due to the small amount of stomach and duodenal contents present at the time; that pylorospasm has nothing to do with causing the pain of duodenal ulcer; that the pain must originate in the cap; that all indications are unfavorable to the idea that the pain of duodenal ulcer is due to hypertension, the so-called adequate stimulus of visceral pain, but is in favor of the idea that the nerve-endings in the ulcer floor become abnormally sensitive to an excess of hydrochloric acid.

The Roentgen Ray in Gastro-Intestinal Affections

DR. CHARLES D. AARON, Detroit: I wish to make a plea for a standard Roentgen-ray test meal. I am of the opinion that the adoption of the following suggestions will increase the value of the Roentgen ray as a diagnostic aid in gastro-enterology: The roentgenologist should be a trained and experienced anatomist and pathologist. There should be standardization of methods and technic. The physician should acquire the ability to make a probable estimation of

the diagnostic value of a Roentgen-ray report. The patient should not be subjected to operation without a confirmation of the original findings by a second Roentgen examination, made after an interval of two or three days. The clinician must not attach too much significance to the Roentgen-ray findings, unless they are absolutely decisive. The lesion discovered by the Roentgen ray must be a constant finding, regardless of position or slight variations in technic. Great care must be exercised to differentiate physiologic and spastic conditions from those that are essentially pathologic. The Roentgen-ray report should be considered on the same basis as any laboratory report. The physician must carefully correlate the Roentgen-ray findings with the anamnesis and the clinical and laboratory findings.

DISCUSSION

DR. F. H. BAETJER, Baltimore: With different meals, the motility and emptying time of the stomach are different; so that it is impossible to reconcile the findings of one roentgenologist with another. Every stomach is different, so you must determine the motility from the standpoint of that individual stomach. For instance, the stomach of a fat man occupies a horizontal position, and tends to empty more quickly than the fish-hook stomach found in a thinner person. Moreover, chronic irritative lesions elsewhere in the digestive tract will produce changes in the gastric condition.

DR. ARTHUR F. CHASE, New York: In making a diagnosis, it is important to realize that the patients are laboring under a peculiar nervous condition with this enormous amount of bismuth in the stomach. Prolonged examinations, therefore, will produce abnormal pictures. I believe the pain in duodenal ulcer to be due to spasm produced by substances passing over irritated nerves.

DR. GEORGE R. LOCKWOOD, New York: While Roentgen-ray diagnosis has been one of the most valuable things in internal medicine brought into use within the last few years, it has its limitations. When it agrees with clinical and laboratory findings, we are quite correct in thinking we have done a good thing in making Roentgen-ray examination; but when the Roentgen-ray diagnosis is not corroborated or is antagonized by other clinical laboratory methods, we are decidedly puzzled.

DR. CLEMENT R. JONES, Pittsburgh: I wish to enter a protest against the use of buttermilk as a vehicle for the bismuth. The varying degrees of acidity of commercial buttermilk may account for some of the variations in the results at different times.

DR. FRED B. LUND, Boston: I have seen several cases lately in which the diagnosis of duodenal ulcer was made on the basis of deformities in the duodenal cap, but in which operation showed adhesions of the great omentum to the pylorus or to scars on the abdominal wall, producing an S-shape to the duodenum, and even the appearance of a little cap. The long, narrow line that Dr. Mills says is indicative of cancer may prove a valuable aid in early diagnosis. It was seen in two cases of growth of the pylorus which I had recently. I had supposed it occurred only in cases of extensive cancer, but both these growths were simply on the side of the pylorus and the first portion of the duodenum.

DR. WILLY MEYER, New York: It is wrong to let cases go to the Roentgen-ray man without giving him their clinical history, and then ask him to make a report on which to base a diagnosis, as is done in most hospitals.

DR. DUDLEY D. ROBERTS, Brooklyn: Perforating gastric ulcers are rather uncommon. I have seen only two perfect pictures of this condition among my own cases, one with, and the other without an air-bubble. Both refused operation, were treated medically, and made an entire symptomatic recovery.

Duodenal Feeding in Atony, Dilatation and Ptosis of the Stomach

DR. CLEMENT R. JONES, Pittsburgh: The duodenal tube as used by Dr. Einhorn has been of exceptional service in selected cases. It is the ideal method of rest for the stomach, at the same time supplying the body with nutritious food at a point in the intestinal tract where it can be digested. Certain points in the modification of the treatment suggested by Dr. Morgan have served to place the treatment on a very practical basis: (1) the longer tube, which allows the food to enter the intestines at a point where it can exert no direct pressure on a duodenal ulcer; (2) the discontinuation of the use of sugar of milk in some cases; (3) the drop by drop method, by which it is possible to keep up a continuous flow of the nutrient fluid. In addition, various slight changes in the technic must be made from time to time by those prescribing this treatment.

DISCUSSION

DR. JULIUS FRIEDENWALD, Baltimore: I have used the duodenal tube a great deal in the feeding of cases of ulcer that have resisted the usual method of feeding, and in cases of persistent vomiting, and am quite convinced that I have saved lives by this means.

DR. FRANKLIN W. WHITE, Boston: I have been impressed with the results of the use of this method in my practice, even when the tube had to be sent out to the country to be used by a doctor there. It deserves more thorough trial than it is getting at present.

DR. WILLY MEYER, New York: My experience with the tube is limited to cases of ulcer. I am opposed to its use in atony.

DR. MAX EINHORN, New York: I have never had any case of perforation from the use of the tube. It usually goes down to a point 8 cm. from the teeth, but it can go as far as 92. The pylorus is 56 cm. from the teeth. I have seen some cases of atony and ptosis in which, after two weeks of this treatment, there was a change in the shape and position of the stomach.

DR. THOMAS CHARLES MARTIN, Washington, D. C.: The distance from the incisors to the cardia in a given case is the same as the distance from the eye to the elbow; and that from the cardia to the duodenum is equal to the longest diameter of the splash sound area when the patient is in an angle of 15 degrees.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

May, LXXI, No. 5, pp. 721-880

1 Study of Scopolamin and Morphin Amnesia as Employed at Long Island College Hospital. J. O. Polak, New York.
2 Twilight Sleep; Report of One Thousand Cases. R. M. Beach, Brooklyn.
3 *Use and Abuse of Pituitrin in Obstetrics. R. C. Norris, Philadelphia.
4 *An Improved Method of Closing Abdominal Incision. A. Heineberg, Philadelphia.
5 *An Improved Method of Suturing Flaps in Amputation of Cervix. A. Heineberg, Philadelphia.
6 Transfusion by Syringe Method. G. M. Dorrance, Philadelphia.
7 Acute Traumatic Displacement of Uterus. E. D. Barringer, New York.
8 Clinical Significance of Amenorrhea in Diagnosis of Tubal Pregnancy. M. Rabinovitz, New York.
9 Rapid Method of Determining Expected Date of Confinement. F. L. Adair, Minneapolis.
10 Problems of Foundling Home. J. Zahorsky, St. Louis.
11 Best Artificial Food Mixtures for Hospital Babies. H. Lowenburg, Philadelphia.
12 Prevention of Infantile Atrophy in Hospitals. E. W. Mitchell, Cincinnati.

3. **Use and Abuse of Pituitary Extract in Obstetrics.**—Norris would never use this without exhausting his abilities in obstetric diagnosis. He considers that healthy multiparas with relaxed birth canals offer the widest and safest fields. For inertia in the early stage of labor, the sleep of morphin, chloral or scopolamin is preferred; in the advanced stages of labor, pituitary extract, he says, often will wisely

keep forceps innocuous. The uterus, after the tumultuous visitation of pituitary extract, usually needs the steadying hand of ergot. Half doses are more often to be employed than full doses.

4. **Method of Closing Abdominal Incision.**—With the method used by Heineberg, cutting of the skin and the introduction of infection from the cutaneous surface by the silkworm-gut sutures is avoided. It is performed as follows: The peritoneum is closed with a continuous suture of plain catgut. Silkworm-gut sutures are then introduced about 1 inch apart at the edge of the incision just beneath the skin surface and include all of the layers of the abdominal wall except the peritoneum. The point of emergence of the suture on one side of the incision must be exactly opposite the point of entrance on the other. Each end of the suture is temporarily held in a hemostatic forceps. The deep fascia or aponeurosis is closed with a chromic-catgut suture, continuous or interrupted. The edges may be made to overlap if desired. The skin edges are apposed by a subcuticular stitch of plain catgut. The ends of the silkworm-gut sutures are then crossed and tied over a strip of iodoform gauze.

5. **Suturing in Amputation of Cervix.**—The following method of suture has been devised and employed by Heineberg with gratifying results. He says it is particularly applied to the single flap and circular amputations and the operation of tracheloplasty described by Bonney, but may also be employed in the double flap amputation. The advantages claimed for it are the accurate approximation of the edges of the flaps with a minimum degree of tension on the sutures. In suturing the flaps after a single flap amputation or tracheloplasty proceed as follows: A chromic catgut suture, the traction suture, is armed at each end with a well curved needle. Each needle is passed through the flap about ¼ inch from its edge; the points of introduction are on the raw surface of the flap ⅛ inch on each side of the median line and the points of emergence are on the vaginal or outer surface of the flap. Both needles are then introduced through the base of the flap at the junction of the raw surface and the mucous membrane of the cervical canal. They are passed through the entire thickness of the lip of the cervix and made to emerge on the vaginal surface about ¾ inch above the edge of the flap and ¼ inch apart. After sufficient traction has been applied to the ends of the suture to invert the flap and bring its edge and base into accurate apposition (avoiding unnecessary tension) the ends of the suture are tied to each other. The other lip is sutured in the same way. The two lips of the cervix which have been separated by the amputation, are drawn together by a mattress suture placed in each side of the cervix about ¼ inch external to the canal. This suture begins in the vaginal surface of the anterior lip about ½ inch above the edge of the flap and emerges on the raw surface of the flap near its base; it is then passed through the lower lip from the raw to the vaginal surface. In a like manner it is passed back through both lips on a line ¼ inch external to the first one. When the two ends of this suture are tied to each other the tension should be sufficient to insure hemostasis and approximation of the edges of the lips. These edges are then held in accurate apposition by interrupted sutures which should be superficially placed and firmly, but not tightly tied.

American Journal of Public Health, Boston

April, V, No. 4, pp. 281-386

13 Science and Public Health. L. K. Frankel, New York.
14 Control of Venereal Diseases by Health Departments. F. H. Baker, Worcester.
15 Reporting and Control of Venereal Diseases. L. Chargin, New York.
16 Evening Clinics for Syphilis and Gonorrhea. M. M. Davis, Jr., Boston.
17 Curse of Narcotism in America. J. Marks, South Hadley.
18 Enforcement of Tennessee Antinarcotics Law. L. P. Brown.
19 Independent Attitude of "Dope User"—What Are We Going To Do About It. D. McCaskey, Lancaster, Pa.
20 Puerperal Septicemia. W. H. Guilfoy, New York.
21 Prevention of Odors at City Refuse Disposal Works. R. Hering, New York.
22 Educational Work in Sanitary Food Values in New York City. D. B. Armstrong, New York.
23 Practical Application of "Saltpeter Method" for Determining Strength of Sewages. A. Lederer, Chicago.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

April, II, No. 10, pp. 613-676

24 Pathology of Verruga Peruviana. R. P. Strong and E. E. Tyzzer, Boston.
25 Trichomoniasis of Vagina and Mouth. K. M. Lynch, Charleston, S. C.
26 Climate of Eastern Nicaragua and Honduras, Notes on Health, Death Rates and Character of Country. J. F. LeBaron.
27 *Failure of Emetin Hydrochlorid, but Apparent Success of Salvarsan in Case of Balantidiosis. B. H. Dutcher, San Juan, P. R.

27. **Failure of Emetin, but Success with Salvarsan in Case of Balantidiosis.**—Emetin apparently having failed in this case, on May 5, 1914, 0.6 gm. salvarsan was administered intravenously by Dutcher. Since that date up to the present writing, July 10, 1914, the stools have been examined carefully on twenty days without finding balantidia on a single occasion. So far as could be observed the patient was in good general health all the time that he carried the infection.

Archives of Pediatrics, New York

April, XXXII, No. 4, pp. 241-320

28 Early Congenital Bone Lues. J. R. Kuth, Duluth, Minn.
29 Opportunity for Cooperation of Medical Profession in Baby Health Conference Movement. L. A. DeVilbiss, New York.
30 Management of Children Between 1 and 2 Years of Age. R. D. Freeman, South Orange, N. J.
31 Case of Ameba Colitis in Child 5 Years of Age. G. J. Greil, Montgomery, Ala.
32 Case of Congenital Deformity of Both Hands and Both Feet. W. N. Bradley, Philadelphia.
33 Case of Congenital Idiopathic Dilatation of Colon (Hirschsprung's Disease). J. I. Linde and S. B. Kleiner, New Haven, Conn.

Arizona Medical Journal, Phoenix

April, III, No. 4, pp. 6-16

34 Epidemic Cerebrospinal Meningitis. R. N. Looney, Prescott.
35 Place of Laboratory Diagnosis in Medical Practice. W. W. Watkins, Phoenix.

Boston Medical and Surgical Journal

May 13, CLXXII, No. 19, pp. 693-730

36 Care and Treatment of Wounded in European War. R. Derby, New York.
37 *Allen Treatment of Diabetes. L. W. Hill and J. L. Sherrick, Boston.
38 Labyrinthitis Following Operation for Atresia. G. Berry, Worcester.
39 Diagnosis and Treatment of Some Rare Fractures. W. P. Coues, Boston.

37. **Allen Treatment of Diabetes.**—Eight patients were treated by Hill and Sherrick on the Allen starvation plan. In every case the patient has become sugar-free and has stayed so, on a reasonable diet which enabled him to hold his weight. Some of these were severe cases of diabetes, young people treated before by the old method and who could not be made sugar-free. When the patient is discharged from the ward he is given written diet slips with two or three menus which he can use on different days, figured out carefully to correspond with his tolerance. The two most important things to remember in this treatment are the following: First, do not raise the diet too quickly after starvation, and pay just as much attention to the protein intake as to the carbohydrate. Second, do not worry if the patient loses weight; it will not hurt him.

There has been no sign of coma in the eight cases treated. The ammonia has always been low, only in one case reading as high as 2.5 gm. per day, which is not at all a high ammonia. In most of the cases it has been very low, usually under a gram a day. This very possibly is due to the low protein intake. There was nothing constant in the appearance or disappearance of the acetone and diacetic acid while on starvation. In one case both disappeared, in others they increased slightly and in others stayed practically the same. No patient has lost more than 5 pounds during his treatment and no patient has gained more than 7 pounds. In most of the cases the weight at discharge was practically the same as at entrance.

Bulletin of Johns Hopkins Hospital, Baltimore

May, XXVI, No. 291, pp. 125-210

40 *Medical Treatment of Peptic Ulcer with Especial Reference to Lenhartz' Treatment. G. Blumer, New Haven, Conn.
41 Studies in Pneumonia. R. Cole, New York.
42 Nervous Patient. C. P. Emerson, Indianapolis.
43 *Diagnosis of Mediastinitis. C. P. Howard, Iowa City, Ia.
44 Tertiary Syphilis of Liver. T. McCrae, Philadelphia.
45 *Influence of Dieting on Course of Cancer. P. Rous, New York.
46 Recent Developments in Relation to Study of Tropical Medicine in United States. R. P. Strong, Boston.
47 *Causes of Indigestion; Study of One Thousand Cases. D. Vanderhoof, Richmond, Va.
48 Significance of Distribution of Urea in Body. D. M. Davis, Baltimore.
49 Renal Functional Tests. J. T. Geraghty, Baltimore.
50 Preparatory Treatment of Urologic Operations. F. Hinman, Baltimore.
51 Experimental Hydronephrosis. N. M. Keith, New York.
52 James Buchanan Brady Urologic Institute. H. H. Young, Baltimore.
53 Extramural Psychiatry in Baltimore. W. B. Cornell, Baltimore.
54 Study of Benign Psychoses. A. Hoch, New York.
55 Ethical Aspects of Psycho-Analysis. J. T. MacCurdy, Ward's Island, N. Y.
56 Observations on Embryo Guinea-Pigs. S. Paton, Princeton, N. J.
57 Onset of General Paralysis. C. Ricksher, Kankakee, Ill.
58 Diphtheroid Infections. C. H. Bunting, Madison, Wis.
59 Microbic Cause and Manner of Infection of Poliomyelitis. S. Flexner, New York.
60 Chondrodystrophia Fetalis. W. G. MacCallum, New York.
61 Origin, Growth and Future of Medical Illustration at Johns Hopkins Hospital and Medical School. M. Brödel, Baltimore.
62 Brief Outline of Status of Radium Therapeutics. C. F. Burnam, Baltimore.
63 Hospital Social Service. M. S. Brogden, Baltimore.
64 Visiting Nurses of Baltimore. M. E. Lent, Baltimore.
65 Nursing in Henry Phipps Psychiatric Clinic. E. J. Taylor.

40. Treatment of Peptic Ulcer.—A critical study of the literature of the medical treatment of peptic ulcer, particularly the rest and diet cures, Blumer says, suggests certain conclusions. It seems safe to assume that certain types of peptic ulcer show a strong natural tendency to heal if given a fair chance. Ulcers near the pylorus tend to heal badly, while bleeding ulcers, for reasons not entirely clear, seem to heal unusually well. Many ulcers would doubtless heal on the all-important complete rest, plus any of the dietary regimens that have been discussed. Others would equally certainly fail to heal under any form of medical treatment. Originators of diets are apt to adhere too closely to those diets, and tend to become prejudiced against different, but equally efficacious ones. The practitioner, whose sole purpose is to cure his patients, and who need not be distracted from this by attempts to glorify the products of his own cortical cells, should realize that there are good points in all of the diets presented. Each has its advantages and each its drawbacks, and the wise physician is he who will use them as frameworks to be clothed with a dietary structure suitable to the needs of each individual patient.

43. Diagnosis of Mediastinitis.—Tuberculosis, Howard found, plays a very important rôle in the etiology of chronic mediastinitis. One or more of the pressure phenomena of mediastinal tumor and aortic aneurysm may be present in this condition. Perez' mediastinal friction was present in two of Howard's cases, and he suggests that it may prove of diagnostic value.

45. Influence of Dieting on Course of Cancer.—In the underfed host, as shown by special experiments, Rous found that proliferative processes take place slowly. Wounds require a long time to heal and an inert foreign body, such as agar-agar, is only tardily organized. It is easy to see why the development of tumors dependent on a supporting stroma would be slower in such animals.

47. Causes of Indigestion.—In order to determine the proportionate frequency of the various causes of indigestion, Vanderhoof tabulated the clinical diagnosis in a series of 1,000 patients examined by Hutcheson and himself. Appendicitis and cholecystitis were responsible for approximately 35 per cent. of the cases of chronic or recurring indigestion; peptic ulcer and neuroses, each 10 per cent., and carcinoma involving the stomach or bowels, 5 per cent. Ten per cent. of the cases fall into a group including chronic gastritis, visceroptosis, peritoneal adhesions, enterospasm and enterogenous toxemia; while 25 per cent. are included in a group in which the indigestion is a reflex disturbance from affections of the kidneys, lungs, heart, eyes, blood and ductless glands, ears, central nervous system, female pelvic organs, and migraine and chronic infectious diseases. The remaining 5 per cent. classified as miscellaneous, include such conditions as pellagra (eight cases), amebic dysentery (six cases), malaria (five cases), diseased tonsils and cyclic vomiting (in children, respectively, six and five cases), intestinal parasites (four cases), together with instances of diverticulitis, peritoneal tuberculosis, cancer of the pancreas and esophagus, retroperitoneal sarcoma, etc. In those patients in whom more than one lesion existed as a possible reflex cause of indigestion, Vanderhoof tabulated, according to his discretion, the one most likely to be responsible.

Vanderhoof has the operative notes of 145 of the 246 cases of appendicitis, and of 60 of the 117 cases of cholecystitis. Of a total of 363 cases of appendicitis and cholecystitis, 205 were operated on; replies were received from 134. From these letters it is learned that 61 per cent. are well, 28 per cent. are much improved, and 11 per cent. are not improved. Only one patient in the series died as the result of the operation. This was a case of gallstones in a morphin habitué who also had chronic nephritis, and death occurred forty-eight hours after operation, due to suppression of the urine.

Cleveland Medical Journal

April, XIV, No. 4, pp. 253-332

66 Teeth of Primitive Man. T. W. Todd, Cleveland.
67 *Presence in Guinea-Pig's Blood of Natural Antisheep Hemolysin. H. N. Cole, Cleveland.
68 Ohio Public Health Federation. W. M. Bowman, Toledo.
69 Vagotonic Neurosis. B. L. Spitzig, Cleveland.
70 Keratitis Parenchymatosa Relative to Old and New Antisyphilitic Therapy. J. Stotter, Cleveland.
71 Scopolamin in Throat and Nose Operations. M. Metzenbaum, Cleveland.

67. Presence of Antisheep Hemolysin in Guinea-Pig's Blood.—Cole found that the blood of the guinea-pig occasionally contains a normal antisheep amboceptor which can be detected by control tubes A and B containing saline, 5 per cent. sheep's red blood cells and 10 per cent. guinea-pig's serum, to be tested, in suitable amounts. If after incubation for thirty minutes at 37.5 C., these tubes show any hemolysis then a certain amount of this immune body is present and unless removed will cause practically all of the serum to be tested to be returned negative to the Wassermann test. As complement is thermolabile and inactive at low temperatures, while amboceptor is thermostabile and active at 0 C. it is possible to get rid of the antisheep hemolysin, present in the guinea-pig serum, by mixing it with washed sheep's red blood cells and allowing them to stand one hour at 0 C. After centrifuging the complement is then ready to be used for the reaction. As a means of lessening the action of this troublesome antibody, Cole advises the use of pooled serum for several pigs.

Journal of Biological Chemistry, Baltimore

April, XX, No. 4, pp. 463-727

72 Organic Phosphoric Acid Compound of Wheat Bran. Occurrence of Inosite Triphosphate in Wheat Bran. R. J. Anderson, New York.
73 Hydrolysis of Phytin by Enzyme Phytase Contained in Wheat Bran. R. J. Anderson, New York.
74 Hydrolysis of Organic Phosphorus Compound of Wheat Bran by Enzyme Phytase. R. J. Anderson, New York.
75 Phytin in Wheat Bran. R. J. Anderson, New York.
76 *Method for Decomposition of Proteins of Thyroid, with Description of Certain Constituents. E. C. Kendall, Rochester, Minn.
77 Urea Content of Human Spinal Fluid and Blood. G. E. Cullen and A. W. M. Ellis, New York.
78 Mercury Derivatives of Aromatic Amines. Contribution to Structure of Primary and Secondary *p*-Aminophenylmercuric Compounds. W. A. Jacobs and M. Heidelberger, New York.
79 Preparation and Melting Points of Higher Aliphatic Hydrocarbons. P. A. Levene, C. J. West and J. Van der Scheer, New York.
80 Animal Calorimetry. Influence of Meat Ingestion on Amino-Acid Content of Blood and Muscle. M. B. Wishart, New York.
81 Id. Rate at Which Ingested Glycocoll and Alanin are Metabolized. F. A. Csonka, New York.
82 Id. Investigation into Causes of Specific Dynamic Action of Foodstuffs. G. Lusk, New York.

V. 19

83 *Colorimetric Estimation of Uric Acid in Urine. S. R. Benedict and E. H. Hitchcock, New York.
84 *Colorimetric Determination of Uric Acid in Blood. S. R. Benedict, New York.
85 Studies in Uric Acid Metabolism. On Uric Acid in Ox and in Chicken Blood. S. R. Benedict, New York.
86 Nutrition with Purified Food Substances. E. V. McCollum and M. Davis, Madison, Wis.
87 Quaternary Salts of Hexamethylen Tetramin. Substituted Benzyl Halides and Hexamethylen Tetraminium Salts Derived Therefrom. W. A. Jacobs and M. Heidelberger, New York.
88 Id. Monohalogenacetylbenzylamins and Their Hexamethylenetetraminium Salts. W. A. Jacobs and M. Heidelberger, New York.
89 *Presence of Iodin in Human Fetal Thyroid. F. Fenger, Chicago.
90 Alfalfa Laccase. H. H. Bunzel, Washington, D. C.
91 *Human Milk. A. W. Bosworth, Boston.
92 Estimation of Fat. H. Rosenthal and P. F. Trowbridge, Columbia, Mo.

76. **Decomposition of Proteins of Thyroid.**—The details of the method devised by Kendall for alkaline hydrolysis of proteins of the thyroid are as follows: The preparation of finely powdered desiccated thyroid, as fat-free as possible, is added to 90 per cent. ethyl alcohol containing 1 per cent. of sodium hydroxid, in the proportions of 2.5 gm. of thyroid per 100 c.c. of alcohol. The powder is insoluble and settles to the bottom of the container. The alcohol is boiled for forty-eight hours under a reflux condenser. During the heating, ammonia is given off which amounts to about 8 per cent. of the total nitrogen. At the end of this time the alchol has dissolved the greater part of the powder and has a dark brown color. The hot alcoholic solution is now filtered with suction. There is a sticky, tarry residue in the bottom of the flask which contains about 9 per cent. of the total nitrogen, 80 per cent. of the total phosphorus, and 7 per cent. of the total iodin.

The alcohol solution is diluted with water until there is about 75 per cent. of alcohol present, and the sodium hydroxid is neutralized with carbon dioxid or sulphuric acid. If sulphuric acid is used, the alcohol is cooled until the sodium sulphate crystallizes out. This is filtered off and the alcohol is then distilled, leaving a water solution of the split products. If carbon dioxid is used the alcohol is distilled immediately, as the sodium carbonate will not separate satisfactorily. The last traces of alcohol are removed by heating in an evaporating dish on the water bath. The water solution on cooling will solidify to a gelatinous mass if there is much fatty acid present.

The solution is diluted to about 100 c.c. for each 20 to 25 gm. of original thyroid used, and is acidified with 20 per cent. sulphuric acid. This produces a precipitate. The acidification is continued until the addition of more acid ceases to cause a precipitate. The solution is allowed to stand in the cold for several hours, generally over night. The precipitate is filtered without suction and is washed with a little water. This now is the first preparation of *A*. It is allowed to dry on absorbent paper and then is completely desiccated *in vacuo* over sulphuric acid. The filtrate is *B*. It is neutralized with sodium carbonate evaporated to small volume, alcohol is added, and the sodium sulphate crystallized out. The alcohol is distilled off and the resulting solution either desiccated or sterilized for therapeutic use. Fifteen or 20 per cent. alcohol may be used as a preservative.

The dry *A* is extracted with petroleum ether, dissolved in dilute sodium hydroxid, and reprecipitated with sulphuric acid. By warming the solution, after addition of the acid, to about 60 degrees and then cooling to about 10 degrees, the precipitate changes to a sandy, finely divided form easily filtered. *A* in this form is fat-free, and amounts to about 5 per cent. of the total weight of thyroid taken. Its percentage of iodin is about ten times as much as that of the starting material, and for normal glands is equal to about 50 per cent. of the total iodin. The distribution of nitrogen is as follows: *B* conatnis 74 per cent. of the total nitrogen. *A* contains 9 per cent. of the total nitrogen. Alcohol residue contains 9 per cent. of the total nitrogen. Liberated ammonia contains 8 per cent. of the total nitrogen.

83. **Colorimetric Estimation of Uric Acid in Urine.**—The modified technic which Benedict and Hitchcock recommend for the determination of uric acid in urine is as follows: Such a volume of urine as will contain from 0.7 to 1.3 mg. of uric acid (2 to 4 c.c. is usually the right amount) is measured into a centrifuge tube, diluted to about 5 c.c. with water, and treated with 15 to 20 drops of an ammoniacal silver magnesium solution. The contents of the tube are now mixed with a small stirring rod and the tube is centrifuged for one or two minutes. The supernatant solution is then poured off as completely as possible, the tube being inverted, and the inside of the lip touched with a towel or piece of filter paper. The residue in the tube is then treated with two drops of 5 per cent. potassium cyanid solution and the mixture thoroughly stirred with a narrow stirring rod for half a minute. A few drops (0.5 to 0.1 c.c.) of water are added and the solution is again stirred. Two c.c. of the uric acid reagent are then added and the mixture stirred, after which 10 c.c. of 20 per cent. sodium carbonate solution are added, the mixture is washed quantitatively into a 50 c.c. flask at the end of about one-half minute, and diluted to the mark. This solution is compared in a colorimeter with a simultaneously prepared colored solution obtained by treating 5 c.c. of the standard uric acid solution (described earlier in this paper) contained in a 50 c.c. flask with two drops of the potassium cyanid solution, 2 c.c. of the uric acid reagent, 10 c.c. of 20 per cent. sodium carbonate solution, and diluting to the mark at the end of about one-half minute. The standard solution is best set at a height of 15 m.m. in the colorimeter.

This procedure yields quantitative results for pure uric acid solutions and for uric acid added to urine. The figures obtained for uric acid in various samples for urine agree within a small percentage with those obtained by the Folin-Shaffer method. The authors are inclined to regard the new procedure as perhaps more accurate than the titration method of Folin and Shaffer.

84. **Colorimeteric Determination of Uric Acid in Blood.**—The proposed modified procedure for the estimation of uric acid in the blood by Benedict is as follows: Twenty c.c. of blood are added to 100 c.c. of boiling 0.01 *N* acetic acid in a casserole and the mixture is heated to boiling for a moment. The casserole is then removed from the flame and 200 c.c. of boiling distilled water are added. The mixture is then poured on a folded filter, and the residue washed with 50 c.c. of boiling water (heated in the same casserole in which the original coagulation took place). The total filtrate is now transferred to a casserole and boiled rapidly down to a volume of about 25 c.c. This solution is poured into a small flask roughly marked to indicate a volume of 50 c.c. The contents of the casserole are washed quantitatively into the flask with the help of two or three portions of water, heating the water to vigorous boiling, and rubbing the sides of the casserole with a rubber-tipped stirring rod each time. The total volume in the flask should not exceed 50 c.c. after addition of the washings. The turbid solution in the flask is now thoroughly cooled under running water and 2 c.c. of colloidal iron solution are added while the flask is gently rotated. The mixture is then filtered through a small folded filter into a 100 c.c. Jena Florence flask, the residue on the filter being twice washed with distilled water. The filtrate obtained here should be as clear and colorless as distilled water. The solution is now boiled down to a volume of 1 to 2 c.c. (care being taken during the early stage of the process to avoid bumping), then carefully poured into a small centrifuge tube, and the flask washed out with three portions of water (1 to 2 c.c. each), heating each to boiling in the flask and shaking thoroughly prior to transferring it to the centrifuge tube.

The contents of the tube (which should have a volume of from 5 to 10 c.c.) are now cooled and treated with twenty drops of the ammoniacal silver magnesium solution described in the preceding paper. The contents of the tube are mixed thoroughly with the help of a narrow stirring rod, and the tube is then centrifuged for one or two minutes. The supernatant fluid is then poured off as completely as possible, and to the residue in the tube are added one or two drops of 5 per cent. potassium cyanid solution, and the mixture is thoroughly stirred for a moment. A few drops of water are then added and the mixture is again stirred. One or 2 c.c.

of the uric acid reagent of Folin and Denis are then added (1 c.c. if the bulk of the original precipitate was very small, otherwise 2 c.c.), and, correspondingly, 5 or 10 c.c. of 20 per cent. sodium carbonate solution are then added, and the colored solution is washed quantitatively into a 25 or 50 c.c. flask and diluted to the mark with water. This solution is then compared in a colorimeter with the colored solution obtained by treating either 0.5 of 1 mg. of uric acid with 2 c.c. of the uric acid reagent, or 10 c.c. of 20 per cent. sodium carbonate solution and diluting to 50 c.c. at the end of about one-half minute. In conclusion it may be stated that this method appears to give the "free" uric acid in blood. The results obtained for the most part closely parallel those obtained by the Folin-Denis method.

89. **Iodin in Human Fetal Thyroid.**—It is claimed by Fenger that both enlarged and normal sized human fetal thyroids contain iodin at least during the last three months of intrauterine life. Normal sized fetal glands contain relatively more iodin and less phosphorus than enlarged fetal glands.

91. **Human Milk.**—As a result of his studies of human milk the following arrangement is offered by Bosworth as representing the probable condition in which the constituents are present in human milk of average composition. Fat, 3.30 per cent.; milk sugar, 6.50 per cent.; proteins combined with calcium, 1.50 per cent.; calcium chlorid, 0.059 per cent.; monopotassium phosphate (KH_2PO_4), 0.069 per cent.; sodium citrate ($Na_3C_6H_5O_7$), 0.055 per cent.; potassium citrate ($K_3C_6H_5O_7$), 0.103 per cent. and monomagnesium phosphate ($MgH_4P_2O_8$), 0.027 per cent.

Journal of Nervous and Mental Disease, Lancaster, Pa.

April, XLII, No. 4, pp. 193-256

93 Seven Cases of Brain Tumor. S. P. Goodhart and H. Climenko, New York.
94 Combined Psychoses (Analysis of Forty-One Recorded Cases). J. E. Lind, Washington, D. C.

Journal-Lancet, Minneapolis

May 1, XXXV, No. 9, pp. 223-248

95 *Clinical and Roentgenologic Findings in Pulmonary Tuberculosis. H. Z. Giffin and W. D. Sheldon, Rochester, Minn.
96 Pellagra; Report of Cases. G. S. Adams and F. V. Willhite, Yankton, S. Dak.
97 *Some of Rarer Forms of Joint Disease. J. E. Moore, Minneapolis.
98 Vaccine Therapy. H. L. Ulrich, Minneapolis.
99 Mastoid Abscesses; Some Indications for Operation. F. C. Todd, Minneapolis.
100 Case of Foreign Body (Thermometer) in the Bladder. B. A. Bobb, Mitchell, S. Dak.

95. **Clinical and Roentgenologic Findings in Tuberculosis.**—A careful study of 373 cases by Giffin and Sheldon showed that practically every case of pulmonary tuberculosis with tubercle bacilli in the sputum can be diagnosed independently by the roentgenologist. In almost all of those cases in which a Roentgen diagnosis was positive when the sputum was negative, a review of the histories has corroborated the Roentgen findings. In a considerable number of patients a diagnosis seems entirely impossible by clinical methods although the roentgenologist reports positive findings. These include so-called early cases, healed cases and diffuse tuberculosis. It would seem that a careful study of stereoscopic plates of the chest will show evidences of tuberculosis as early as the author can at present be positive of its existence by any other method. A keener sense of perception is developed through the visualization of lesions and roentgenology has been a stimulus to physicians in perfecting their skill in physical diagnosis. The information obtained from the negative report of a skilful roentgenologist may be of very great assistance in general medical and surgical diagnosis. Finally, the authors emphasize that trustworthy conclusions can be drawn only by one who has had a considerable experience in the reading of stereoscopic plates. The roentgenologist, not the roentgenogram, makes the diagnosis.

97. **Some of Rarer Forms of Joint Disease.**—Moore discusses caries sicca, hydrops articuli, Charcot's disease, or spinal arthropathy and hemophiliac joint.

Medical Record, New York

May 15, LXXXVII, No. 20, pp. 799-840

101 Medical Aspects of Cancer. L. D. Bulkley, New York.
102 Speech Elementary Sounds. A. L. Benedict, Buffalo.
103 Early Diagnosis of Streptococcic Sore Throat, and Effect of Vaccines in Its Treatment. R. R. Mellon, Ann Arbor, Mich.
104 Two Cases of Depressed Nasal Deformity Resulting from Submucous Operation. W. W. Carter, New York.
105 Case of Panophthalmia Occurring During Pneumonia. R. L. Pitfield, Philadelphia.
106 New Measuring Board for Infants. R. D. Moffett, New York.
107 Urethral Clamp for Postoperative Urinary Incontinence, Devised and Made by Patient for His Personal Use. A. L. Wolbarst, New York.

Michigan State Medical Society Journal, Grand Rapids

May, XIV, No. 5, pp. 251-308

108 *Septic Factor in Three Plagues. W. J. Mayo, Rochester, Minn.
109 Backward Child. F. Allport, Chicago.
110 Some Phases of Sympathetic Ophthalmia. G. M. Waldeck, Detroit.
111 *Intestinal Toxemia. E. L. Eggleston, Battle Creek.
112 Differential Diagnosis Between Functional and Organic Heart Murmurs with Especial Reference to Life Insurance. C. H. Johnston, Grand Rapids.
113 Extent of Insanity and Feeblemindedness and Their Causes in Michigan. A. M. Barrett, Ann Arbor.
114 Case of Mediastinal Tumor (Hodgkin's Disease). J. G. Van Zwaluwenburg, Ann Arbor.
115 Case of Cardiospasm with Dilatation. G. Van Rhee, Ann Arbor.
116 Case of Cystadenoma of Kidney Mistaken for an Ovarian Cyst. W. F. Seeley, Ann Arbor.
117 An Epidemic of Weil's Disease. H. H. Cummings, Ann Arbor.

108. **Septic Factor in Three Plagues.**—That the important rôle of associated septic organisms in the three most widespread plagues of mankind—syphilis, tuberculosis and cancer—is not generally appreciated, is the keynote of Mayo's paper. He says that much of our conception of the primary lesions of syphilis is based on appearances due not to the spirochete alone but to associated septic organisms. Because of the lack of hardness in the base, a hardness due to sepsis, not to syphilis, the diagnosis of chancre of nonvenereal origin is apt to be missed in these days of cleanliness and antisepsis. The diagnosis should rest on microscopic evidence, the finding of the spirochete in the chancre and later by serologic evidence rather than on the gross appearance of the secondaries, the accentuation of which is due to sepsis and therefore in clean people may not be a prominent feature. The importance of a correct early diagnosis in the prevention of systemic infection cannot be overestimated. If this great opportunity is missed, early diagnosis will at least enable careful curative treatment.

Most patients afflicted with tuberculosis do not die from the disease but from the associated sepsis. The surgeon must use great care in operations on pure tuberculous lesions to prevent secondary infections with other organisms and not drain on account of the danger of subsequent infection, unless mixed infection is present. Much of the cachexia of cancer is due to associated sepsis and much of the pain comes from septic infection. Cleanliness and antisepsis give great relief. The high mortality following radical operations for cancer of the large bowel and rectum is mainly due to sepsis and may be reduced one-half by two-stage operations. As much may be said in advanced cancer of the cervix when the preliminary cauterization with the actual cautery, especially the Percy method, followed by a complete hysterectomy, give greater promise of cure with a smaller mortality. Cancers of the surface of the body covered with a sloughing material and surrounded by an extensive inflammatory zone should be destroyed with the actual cautery, and when the induration has disappeared the entire area may be removed with plastic repair of the defect.

111. **Intestinal Toxemia.**—In the treatment of this condition Eggleston states that their efforts must be directed chiefly toward limiting the putrefactive processes of the intestinal tract. This can be accomplished in five different ways: 1. The selection and ingestion of food that is freed from contamination with putrefactive bacteria. 2. The proper preparation of the food for prompt digestion. 3. The selection of a menu that will not furnish an excess of protein material. 4. By preventing abnormal stasis of the intestinal contents.

5. By controlling the intestinal flora so that the putrefactive bacteria are reduced.

New Orleans Medical and Surgical Journal

May, LXVII, No. 11, pp. 895-982

118 Enlarged Thyroid; Report of Successful Case of Thyroidectomy. L. Sexton, New Orleans.
119 *Case of Pellagra Treated Successfully with Trisodium Citrate. A. E. Fossier, New Orleans.
120 Technic in Closure of Abdominal Incision. E. D. Martin, New Orleans.
121 Removal of Gasserian Ganglion; II. Ulcer of Stomach; III. Probable Perineal Fistula; IV. Ruptured Bladder. C. W. Allen, New Orleans.
122 Reclaiming Stepchild of Ophthalmology. R. C. Lynch, New Orleans.
123 Use and Abuse of Forceps; Report of Cases. W. D. Phillips, New Orleans.
124 Postural or Attitudinal Disturbances. J. T. O'Ferrall, New Orleans.

119. **Pellagra Treated Successfully with Trisodium Citrate.**—Fossier's patient was given 2 decigrams of cacodylate of soda for twenty-five consecutive days, also daily injections of 1 c.c. of a 10 per cent. solution of trisodium citrate by hypodermic injections. Fever ranged from normal to 102 degrees during the first twenty days of treatment, after which it gradually subsided. The bowels became regular and the skin gradually improved. The mental condition cleared up. At the end of the month the patient was wonderfully improved both physically and mentally and was walking about. When he was discharged at the end of another month all visible evidences of pellagra, the skin lesions, the mental conditions and the gastro-intestinal disorders had disappeared.

New York Medical Journal

May 15, CI, No. 20, pp. 981-1032

125 Treatment for Inoperable Cancer. S. P. Beebe, New York.
126 Relation of Arteriosclerosis to Ophthalmology, Neurology and Surgery. L. F. Bishop, New York.
127 Arteriosclerosis as Seen by Ophthalmologist. W. B. Marple, New York.
128 Field of Surgery in Arteriosclerosis. J. B. Bissell, New York.
129 Epistaxis in Arteriosclerosis. C. E. Perkins, New York.
130 Arteriosclerosis and Control of Uterine Hemorrhage. W. P. Healy, New York.
131 Arteriosclerosis with Relation to Prostatic Operations. T. M. Townsend and J. J. Valentine, New York.
132 Arteriosclerosis in Its Relation to Life Insurance. J. D. Quackenbos, New York.
133 *Emergency Medicine for Soldier. H. H. Seelye, Atlantic Beach, Fla.
134 Relation of Diseases of Nose and Throat to General Practice of Medicine. H. Parrish, Philadelphia.
135 Life Insurance and Laboratory Examination. J. Diner, New York.

133. **Emergency Medicine for Soldier.**—The formula suggested by Seelye for a rapidly efficient anodyne, as one of the items of his first-aid packet, in the form of a tablet or lozenge that could be readily swallowed with a drink of water, or even chewed up and consumed in a dry state, consists of acetanilid 6 grains, morphin ¼ grain, oil of wintergreen ⅛ grain, and saccharin ⅛ grain.

Pennsylvania Medical Journal, Athens

April, XVIII, No. 17, pp. 501-598

136 Arthritic Neuritis. J. H. W. Rhein, Philadelphia.
137 *Form of Diabetic Coma, Not Due to "Acetone Bodies." J. Rosenbloom, Pittsburgh.
138 Roentgen Ray Examination of Accessory Sinuses. W. F. Manges, Philadelphia.
139 Significance of Pain in Lower Back and Legs from Orthopedic Standpoint. D. Silver, Pittsburgh.
140 Two Cases of Traumatic Rupture of Intestines. W. Lathrop, Hazelton.
141 Constipation from Standpoint of Proctologist. C. F. Martin, Philadelphia.
142 Constipation as Factor in Nervous and Allied Disorders. A. C. Buckley, Philadelphia.
143 Constipation in Women. F. C. Hammond, Philadelphia.
144 United States Pharmacopeia and National Formulary. E. O. Francke, Athens.

137. **Diabetic Coma Not Due to "Acetone Bodies."**—The three cases of diabetic coma studied by Rosenbloom, which differed so completely from the modern idea of acidosis as the cause of coma, were all of the severe type, with no tolerance for carbohydrate, and with a restricted protein intake there was no lessening of the glucose output. They were studied for a period which varied from one week to two months. During this time the urine contained a normal amount of ammonia-nitrogen and showed no trace of acetone, diacetic acid or beta-oxybutyric acid. There was no evidence of any kidney pathology. The urine contained excessive amounts of colloidal nitrogen, neutral sulphur and amino-acids. Death occurred in typical diabetic coma.

In the last case studied 200 c.c. of blood were taken shortly before death. Only faint traces of acetone, diacetic acid and beta-oxybutyric acid were found. The nonprotein nitrogen of the blood serum was normal in amount. This case is especially interesting on account of the fact that about fifty hours before death, showers of granular casts were present in the urine. The urine was cloudy, due to the presence of such an enormous number of casts. The frequent inadequacy of the alkaline therapy, Rosenbloom believes, can be explained on the basis of the fact that the acetone bodies are not always the important factors in the causation of the symptoms in cases of diabetic coma, but that considerable attention must be paid to the study of the excretion of amino-acids, polypeptids, and certain unknown substances in this disease.

West Virginia Medical Journal, Wheeling

May, IX, No. 11, pp. 363-396

145 Antecedents of High Blood Pressure and Nervousness. T. A. Williams, Washington, D. C.
146 Rights and Duties of Physician in Court. H. C. Hervey, Wheeling.
147 Insanity More Preventable than Curable. L. V. Guthrie, Huntington.
148 Diagnosis of Mediastinal Tumors. J. Schwinn, Wheeling.
149 Laboratory and General Practitioner. S. L. Cherry, Clarksburg.
150 Eclampsia; Report of Cases. C. R. Foutche, Berkeley Springs.
151 County Medical Society. J. E. McDonald, Logan.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal, London

March, XXXIII, No. 127, pp. 1-72

1 Intestinal Stasis. W. A. Lane.
2 Toxic Polyneuritis of Motor Type. J. M. Clarke.
3 Pernasal Operation for Frontal Sinus Suppuration. P. Watson-Williams.
4 Outbreak of Institutional Dysentery Due to Y. Bacillus. R. H. Norgate and I. W. Hall.

British Medical Journal, London

April 24, I, No. 2834, pp. 705-748

5 *Method of Treating Compound Fractures of Femur Due to Projectiles. A. H. Tubby.
6 Pathology of Ulcer of Stomach, with Indications for Treatment. C. Bolton.
7 *Gastric Analysis. T. Heaton.
8 Comparison Between Some Physiologic and Pathologic Conditions. J. Barcroft.
9 Epidemic Cerebrospinal Fever: Place of Meningococcus in Its Etiology. E. C. Hort, C. E. Lakin and T. H. C. Benians.
10 Clinical Laboratory Methods in Metabolic Diseases. A. De T. Mouillot.
11 Wound Infections; Methods of Various Factors in Treatment. A. E. Wright.

5. **Treatment of Fractures of Femur Due to Projectiles.**—The method used by Tubby is a combination of plaster of Paris and strips of soft iron. The plaster of Paris bandages are rolled on either over flannel bandages or a stockinet garment, and strips of malleable iron. The apparatus is applied under pulley extension and full anesthesia.

7. **Gastric Analysis.**—Heaton maintains that gastric analysis by the ordinary method is not the analysis of the gastric juice, but is rather the analysis of a mixture of this with the remains of the test meal. He points out that if it were known how much of the mixture was meal and how much was gastric juice, both difficulties would disappear, for it would become possible to calculate the actual composition of the gastric secretion. These results he has attained by adding to the test meal some substance at a known concentration, and then estimating the concentration of the substance subsequently in the fluid obtained for analysis. For

this work the substance used has been urea. To an ordinary test breakfast, consisting of toast and a pint of tea, 5.72 gm. of urea are added, making a 1 per cent. solution. The concentration of the urea in the fluid subsequently obtained indicates the degree of dilution by gastric juice which the fluid of the meal has undergone. The conditions in which this refinement of gastric analysis is of value are: In cases in which there is abnormally rapid or abnormally slow emptying of the stomach through the pylorus; and in cases in which an increased or decreased secretion simulates or is indistinguishable from an increased or decreased acidity.

Journal of Royal Naval Medical Service, London

April, I, No. 2, pp. 103-226

12 *Best Method of Treating Wounds Sustained in Action, Especially During Early Period after Their Infliction. W. W. Cheyne, P. W. Bassett-Smith and A. Edmunds.
13 Casualties in Action Between "Pegasus" and "Königsberg." A. J. Hewitt.
14 North Sea Action of January 24. J. R. Muir.
15 Some Experiences in Hospital Carrier. K. H. Hole.
16 Recent Research Relating to Undulant or Mediterranean Fever. P. W. Bassett-Smith.

12. **Method of Treating Wounds.**—Of the substances which the authors tested, boric and salicylic acids, cresol and phenol seem to be the most useful. Cresol and phenol have very considerable activity at a distance both as inhibitory and as destructive agents, and when combined in a wax and lanolin base, go on diffusing for a considerable time. The result is that they prevent the growth of bacteria over a considerable area, and are able also to destroy the ordinary pyogenic nonspore-bearing bacteria over the greater part of that area. The mixture of boric and salicylic acids is more potent in both directions, and, apparently, as evidenced by experiments on guinea-pigs, can prevent the action of spore-bearing organisms also. In some ways, however, this mixture of boric and salicylic acids is not so suitable as the others, especially in that it is not stored up in the same way, but the combination with cresol or phenol pastes seems very efficacious in animals.

Boric and salicylic acids have not acted so well in the form of pastes as in powder. In a paste with lanolin and wax it does not diffuse at all well, and in the experiments on animals the paste with gum tragacanth, which diffuses very well in agar, did not act so well as the powder. The authors, therefore, propose that salicylic and boric acids in equal parts should be used as a powder and thickly dusted over the wounds so far as possible, and that its action should be reinforced by the injection of cresol paste (20 per cent. in lanolin and wax base) into the interior of the wound in various directions.

Journal of Tropical Medicine and Hygiene, London

April 15, XVIII, No. 8, pp. 85-96

17 *Vibrio (Vibrio Kegallensis Cast., 1913) Isolated from Cases of Paracholera. A. Castellani.
18 Spinal Analgesia in Native Practice. A. Y. Massey.
19 An Attempt to Colonize "Millions" in Malay Peninsula, for Anti-malarial Purposes. C. Strickland.

17. **Vibrio Isolated from Cases of Paracholera.**—From two cases of clinically cholera-like disease, and from the water of a well near which several cases had occurred, a vibrio was isolated by Castellani which is biologically different from the true *V. cholera*. In a preliminary note, published some time ago, referring to the first case alone, he named it *V. kegallensis cast.*, 1913. Though its pathogenicity has not been completely proved the probabilities are, in his opinion, that it is the cause of certain cases of cholera-like disease, or "paracholera."

Lancet, London

April 24, I, No. 4782, pp. 843-896

20 Wound Infections. (To be continued.) A. E. Wright.
21 Scotoma of Migraine. F. W. Edridge-Green.
22 Some Physical Defects Met with in Raising of an Army. T. Oliver.
23 *Treatment of Gunshot and Shell Wounds (Liquid Glucose and Phenol). H. B. Whitehouse.
24 Brain Abscess in Case of Paratyphoid. R. L. Scott and W. H. Johnston.
25 Case of Hysterocatalepsy. L. A. Weatherly.
26 Roentgen Ray Theater in War Hospitals. J. R. Caldwell.
27 Reinvestigation on Nature of Cellular Elements Present in Milk. R. T. Hewlett and C. Revis.
28 Urinary Calculus in Pelvic Portion of Ureter. J. E. Adams.
29 Treatment of Bacterial Infections of Projectile Wounds. F. F. Burghard and Others.

23. **Treatment of Gunshot and Shell Wounds.**—Adopting Wright's recommendations, Whitehouse treated a series of shell and gunshot wounds of varying degrees of severity by the application of hypertonic saline solution. The results obtained were sufficiently convincing to prove the correctness of Wright's views. At the same time, the degree of lymph lavage produced by a saline solution was not great, and although sepsis diminished and wounds healed the important factor of time was not sensibly diminished. It appeared to Whitehouse, therefore, that even better results were possible by employing a solution of greater osmotic power. He therefore had a solution of liquid glucose containing sufficient phenol to have a strength of 1:80. This solution was applied directly to the wound surfaces and by means of plugs was carried into the recesses of the same. The results quite exceeded his most sanguine expectations. In a few hours sufficient lymph was exuded in each case to saturate the whole of the wool and bandage covering the part. Coincidently the purulent character of the discharge changed, and in a day or two a healthy granulating surface remained. The cases treated by phenolized glucose dressings include severe compound fractures and large lacerated wounds of the extremities, some involving the elbow joint and necessitating excision of the joint. One case of shell wound of the cranium exposing the dura mater and injuring the superior longitudinal sinus was also so treated. All the cases made a rapid recovery and were ready for transfer at the end of seven days.

The routine which Whitehouse now adopts in the treatment of all septic wounds may broadly be expressed as follows: (1) Removal of foreign bodies after location by Roentgen rays and if anatomically possible; (2) application of efficient drainage by enlargement of the wounds of entry and exit, or by fresh incisions into the tissues if required; (3) removal of as much necrotic and contused tissue and blood clot as possible; (4) application of warm hydrogen peroxid (20 volts) to the recesses of the wound if anaerobic infection is suspected; and (5) establishment of profuse lymph lavage by the application of a solution of phenolized glucose on white gauze dressing or gauze plugs.

Quarterly Journal of Medicine, London

April, VIII, No. 31, pp. 191-276

30 *Two Cases of Patency of Ductus Arteriosus. T. W. Griffith.
31 Alterations in Arterial Structure and Their Relation to Syphilis. H. M. Turnbull.
32 Mumps. A. Feiling.

30. **Patency of Ductus Arteriosus.**—The two examples of patency of the ductus arteriosus reported by Griffith to have occurred in patients in whom the affection was recognized during life. One of these succumbed to infective endocarditis and the diagnosis was verified on the post-mortem table. In the other the condition was associated with some further anomaly of the great vessels and with a development error which had given rise to cyanosis, for this is a symptom which is not often met with in uncomplicated cases of patency of the arterial duct.

In the fatal case there was found considerable enlargement of the heart, which weighed about 14½ ounces. There was marked hypertrophy without notable dilatation of the right ventricle. There was recent pericarditis, and before the heart was removed there was found on the anterior and left aspect of the pulmonary artery, which was generally dilated, a large bilobed aneurysmal swelling. There was old standing disease of the mitral valve with moderate stenosis of the orifice and both this valve and the aortic segments presented large fungating masses of vegetations. Evidence of recent endocarditis was found at the junction of the two posterior segments of the pulmonary valve. The lumen of the pulmonary artery was almost occluded by a large mass of blood-

stained vegetations, which was gently adherent to the walls of the vessel at two situations. One of these was at the anterior and left aspect of the artery, in which there was a double concavity corresponding to the convexity seen from the outside; the other was around the opening of the ductus arteriosus, and into this there projected a conical mass of vegetations so as completely to occlude the aperture. When the ductus was cleared of this it permitted the passage of a No. 9 catheter. The space left for the passage of the blood between the mass of vegetations and the wall of the vessel was probably much greater during life than one might expect from an inspection in the postmortem room, in which the dilating influence of the blood pressure would be absent.

Sei-I-Kwai Medical Journal, Tokyo

April, XXXIV, No. 4, pp. 21-26

33 Causes of Acute Appendicitis; Difficulties Experienced in Diagnosis and Importance of Pulse Examination. Y. Takaki.

Bulletin de l'Académie de Médecine, Paris

April 13, LXXIII, No. 15, pp. 441-456

34 *Meningococcus Suppurative Arthritis. A. Netter and H. Durand.
35 Normal and Pathologic Elimination of Glucuronic Acid. (La glycuronurie; ses variations dans la cirrhose et le diabète.) H. Roger and M. Chiray.
36 Sterilization with Formaldehyd Fumes from Evaporation of Trioxymethylene. (Stérilisation par les vapeurs de formol en chirurgie de guerre.) G. Gross.
37 *Wounds of the Eyes in War. (Blessures oculaires de guerre.) A. Darier.

34. **Meningococcus Arthritis.**—Netter and Durand have found a suppurative joint trouble a comparatively frequent complication of cerebrospinal meningitis, second in frequency only to otitis media, but it has always terminated favorably. The joint regained its normal functioning in every case but recovery seemed to be hastened by injection of antimeningococcus serum directly into the joint. In the last seven years this suppurative arthritis was encountered in 11 of their 200 cases of cerebrospinal meningitis. Various joints were affected and sometimes several at one time. In 5 cases no microbes could be cultivated from the joint or revealed by the microscope. In this group the arthritis developed later than in the others. In one infant of 10 months meningococci were found in the feet processes while the meningitis was at its height. As this subsided under intraspinal serotherapy, the toe processes subsided also, but then pus accumulated in one ankle. No meningococci could be cultivated from it however, and the suppurative process promptly disappeared at a single injection of antimeningococcus serum. In one child 1 year old there were eleven separate suppurative processes. In four infants the suppurative processes were in fingers and toes; in 2 of these purpura was the first sign of anything wrong. The ages of the patients ranged from 10 months to 30 years. The meningitis terminated fatally in 4 cases. In addition to the above 11 cases they report the death of a 3 months' babe from a primary meningococcus arthritis in the shoulder; the meninges were apparently normal.

This meningococcus arthritis resembles very much the primary or secondary arthritis set up by pneumococci. They both are more benign than joint trouble of other origin, but the meningococcus affection has the advantage of a specific medication, namely, direct local injection of antimeningococcus serum.

37. **Wounds of the Eyes in War.**—Darier comments on the great increase in the number of cases in which the eyes have been wounded since the close fighting in trenches. The head being most exposed is more often hit than the rest of the body and he has already encountered a hundred cases of injury of the eyes, many of them requiring extensive plastic operations on the lids or to provide a support for an artificial eye. He urges a special colored tag for a soldier whose eye has been injured so that he can be rushed with the minimum of delay to an eye specialist. First aid should be with a soft bandage, an injection of morphin if the pain is severe and, if there is much destruction of tissue, two or three doses of antitetanus serum.

Presse Médicale, Paris

April 22, XXIII, No. 17, pp. 129-136

38 Electric Devices to Aid in Treatment of the Wounded. (Quelques conseils sur le réglage, la distribution et l'application du courant électrique dans le traitement des blessés.) T. Nogier.
39 Peripheral and Radicular Innervation of the Integument. (Quatre schémas destinés à servir de guide pour l'étude des lésions des nerfs périphériques; de la moelle épinière et de ses racines.) M. and Mme. Dejerine.

Correspondenz-Blatt für Schweizer Aerzte, Basel

April 10, XLV, No. 15, pp. 449-480

40 *Impressions in the German Military Hospitals. (Eindrücke aus deutschen Kriegslazaretten.) T. Kocher.

40. **Impressions in German Field Hospitals.**—Kocher remarks that "against the dark background of the war, there stands out in bright relief the care of the wounded, wonders of aid and Christian sympathy on a scale beyond anything ever experienced or anticipated." In these thirty pages Kocher sketches the whole organization and working of the care of the wounded and sick in Germany as he has made his rounds of investigation, and he urges the authorities in his own country, Switzerland, to make it possible for young physicians and surgeons to study in the arena of war. The unprecedented opportunity now afforded is a university course in up-to-date war surgery. The principles of surgery, he adds, are the same under all circumstances, but the primary healing of wounds in peace scarcely prepares a surgeon for work in war. He comments in particular on the way in which the chief of the German army medical service has always kept in close touch with the leading surgeons and clinicians throughout the country, attending all their national annual meetings and keeping posted as to their work and achievements. He called them in at once as consultants in this war, and their advice, as *Generalärzte*, has had the greatest influence on the whole organization of the medical service. The wounded and sick, friends and foes alike, wherever Kocher went (Freiburg, Strassburg and Frankfurt) he remarks in conclusion, have such confidence that everything possible is being done for them that this is proving an important factor in the cure.

Deutsche medizinische Wochenschrift, Berlin

April 22, XLI, No. 17, pp. 485-516

41 Rosenbach's Tuberculin in Surgical Tuberculosis. Hackenbruch.
42 *Roentgen-Ray Treatment of Chronic and Subacute Eczema. F. M. Meyer.
43 War Wounds of the Nose and Sinuses, Throat and Larynx. (Schussverletzungen der oberen Luftwege.) R. Kafemann.
44 *Stereoscopic Roentgenography for Localization of Foreign Bodies. Brauneck.
45 *Acute Osteomyelitis of Vertebrae after Wound in War. (Wirbelosteomyelitis nach Schussverletzung.) A. Wolff.
46 Mineral Waters of Foreign Source and the German Practitioner. (Der deutsche Arzt und die Heilquellen des feindlichen Auslandes.) H. Kionka.
47 *When a Country is at War, Can a Minor Operation, To Remove Physical Disability for Military Service, Be Imposed on a Man without His Consent? (Das Recht und die Pflicht zu operativen Eingriffen an Heerespflichtigen in Kriegszeiten.) F. R. Brewitt and Ebermayer.

42. **Roentgenotherapy of Chronic Eczema.**—Meyer has been much impressed with the complete cure of chronic or subacute eczema of long standing in thirty-eight cases treated with hard Roentgen rays filtered through 1 mm. aluminum. The rays are of the 10 or 11 Wehnelt standard of hardness and the filter is applied close to the tube, thus avoiding the secondary rays generated when the filter is close to the focus. The distance of the field from the tube was always 20 cm. Some of the patients had more than one patch of eczema. None proved refractory and the cure was sometimes realized with a few exposures, others requiring a course of weekly exposures until a total dosage of 2.5 full doses had been given.

In three cases the eczema was of ten years' standing, in the others from seven weeks to five years. The chief advantages of roentgenotherapy for this purpose are the short time required; four weeks are ample, the regularity of the effects attained and the fact that this treatment scarcely interferes at all with the patient's occupation. He warns that a syphilitic skin affection is liable to be mistaken for eczema. This occurred in two cases brought to him for Roentgen treatment

after failure of other measures. He applied the Wassermann test which elicited a vigorous reaction, and the "eczema" healed up completely in a week under two injections of a mercurial salt after having resisted all other measures for five years. In a second case the supposed "eczema" of the palm yielded to the Roentgen exposures after proving refractory to salves and other measures for four years. There was a violent reaction, however, to the final dose. The "eczema" recurred after a brief interval, and this time became aggravated under roentgenotherapy. The Wassermann test then applied gave positive findings and specific treatment was at once instituted. He is convinced that the hard rays are biologically more active than the soft rays. In conclusion he warns against any attempt at roentgenotherapy during the acute phase of eczema.

44. **Stereoscopic Roentgenography.**—Brauneck deplores that so few practitioners have mastered the comparatively simple technic for stereoscope roentgenography. It is especially instructive in localization of metal foreign bodies and for all kinds of topographic investigation, especially with fracture of the pelvis and of the bones in the hand and foot. The stereoscopic Roentgen picture is alive, he remarks, in comparison to the dead, flat picture.

45. **Osteomyelitis of the Spine after a Wound in War.**—Wolff quotes Henle's compilation of five cases of acute osteomyelitis with a traumatic origin, and Grisel's compilation in 1903 of fifty-six cases of acute infectious spondylitis. He then describes a rapidly fatal case in a soldier, the first symptoms of the osteomyelitis not developing until six weeks after a scrap from a shell had been driven into his neck. The bleeding was arrested at once by ligation of the artery injured, the surgeon being close at hand, and three weeks later the scrap of metal was extracted through the esophagus. Three weeks after this signs of spinal meningitis developed and the man died within a month. Necropsy showed that the third cervical vertebra had been injured by the scrap of shell and osteomyelitis had developed with local meningitis. The case teaches that foreign bodies should never be removed through the esophagus wall, opening up a portal for infection. It also emphasizes the necessity for treating every case in which there is a suspicion that a vertebra has been injured with extension or a plaster cast. If the scrap of shell had been removed in this case from an opening in the rear, provision for drainage, etc., would have been realized and the infectious process might have been warded off.

47. **Right to Perform Operations to Remove Physical Disability.**—Brewitt relates a number of instances of wounded soldiers who are developing into helpless cripples because they refuse to permit the minor operations that would give them a useful limb instead of the present contracted member doomed to atrophy. The men are unable to estimate the fate they are preparing for themselves and he thinks that in such cases, as also for men who have been exempted from military service on account of some physical defect easily remedied by a minor operation, the military authorities should be able to interfere. He refers in particular to hernias, benign tumors, excrescences, etc. If any mishap should occur the family would be entitled to a pension just as if the man had fallen on the field. He calculates that from 30,000 to 40,000 men might thus be added to the ranks who are otherwise eminently fitted for military service. Ebermayer discusses the question from the legal standpoint, regarding it as extremely doubtful whether the authorities have any right to interfere in this way with a man's right to his own person, even during the exigencies of war.

Medizinische Klinik, Berlin

April 18, XI, No. 16, pp. 443-468

48 *Cardiovascular Disturbances in Soldiers and Constitutional Inferiority. (Herzbeschwerden bei Kriegsteilnehmern und konstitutionelle Gesichtspunkte bei der Beurteilung derselben.) R. Schmidt.

49 Improvised Arrangements for Sterilization of Clothing, etc., in the Field. (Improvisation von Dampfdesinfektionsapparaten und Entlausungsanstalten im Felde.) P. Uhlenhuth and Olbrich. (Entfernung von Kleiderläusen durch Schwefeldämpfe. E. Kuhn.

50 *Typhus. (Kriegstyphus.) H. Boral. Concluded in No. 17.

51 Trauma and Infectious Complications. (Trauma und Wundinfektionskrankheiten.) E. Schepelmann.

52 *Treatment of Open Wounds. (Zur Wundbehandlung.) Wilcke.

53 *Diabetes Following Trauma. Rings.

48. **Heart Disturbances with Constitutional Physical Inferiority.**—Schmidt discusses this subject as it bears on military efficiency, reviewing the signs which permit recognition of heart disturbances resulting from physical inferiority. In testing the heart functioning in dubious cases, it is very instructive to have a control person of about the same build, with normally functioning circulatory apparatus, go through the exercises with the one being tested. The pulse before and after the exercises, the count, the quality, the blood pressure, the respiration rate, the apex beat, the complexion, perspiration, etc., are all useful in estimating the functional capacity of the cardiovascular apparatus. The interval before the previous status returns is especially instructive.

50. **Typhus.**—Boral has had 760 cases of typhus in his charge in the eastern seat of war. In 24 cases actual psychoses developed; in 15 they were of the megalomania-paranoia type, in 3 kleptomania. Deafness is an important symptom in typhus, he remarks, as in no other disease does deafness come on so regularly with the high temperature. The slow pulse was in striking contrast to the fever in nearly every case. The mortality was 9 per cent. exclusive of the moribund cases. A number of patients developed pyemic processes during convalescence and they often took the form of cold abscesses. Those in the abdominal walls simulated lipomas; sometimes the abscesses ran a symptomless course. Acute otitis media developed in 31, parotitis in 15, orchitis in 10, pneumonia in 39, and in 36 there was intestinal hemorrhage, and a relapse in 24 cases.

52. **Treatment of Open Wounds.**—Wilcke has found it of great advantage to pour into jagged wounds liquid paraffin in which iodin has been incorporated in the proportion of 1 to 300 parts. When the wounds are cleansed he uses a salve with 1 part each of iodin and potassium iodid to 100 parts of petrolatum.

53. **Diabetes Following Trauma.**—In the case reported severe neurasthenia developed a few months after the man had fractured the sixth, seventh and eighth thoracic vertebrae. The neurasthenia was accompanied by symptoms of diabetes. They continued a progressive course and when the man died, thirteen years after his fall, the courts accepted the traumatic origin of the diabetes and awarded an indemnity to the heirs.

Wiener klinische Wochenschrift, Vienna

April 15, XXVIII, No. 15, pp. 387-410

54 Injuries of the Eyes in War. (Kriegsverletzungen des Auges.) R. Possek.

55 Vaccine Therapy of Typhoid. J. Sladek and S. Kotlowski.

56 *Charcoal in Cholera. F. Groak.

57 Report of Field Prosector. (Bericht über die Tätigkeit der Prosektur des Schles. Krankenhauses in Troppau während des ersten Kriegshalbjahres mit bes. Berücksichtigung der Infektionskrankheiten.) A. Materna and R. Penecke.

58 New Orthopedic Department of Innsbruck Surgical Clinic. H. v. Haberer.

56. **Charcoal in Treatment of Cholera.**—Groak gave each cholera patient 5 gm. of animal charcoal (a heaping tablespoonful) four times a day. The suspension, with a little brandy, was sipped slowly. The charcoal treatment was supplemented with subcutaneous infusion of from 1 to 2.5 liters a day of a 1.5 per 1,000 salt solution. The mortality dropped to 12 per cent. under this treatment.

Gazzetta degli Ospedali e delle Cliniche, Milan

April 11, XXXVI, No. 29, pp. 449-464

59 *Gastric Psychoneuroses. G. Calligaris.

April 15, No. 30, pp. 465-480

60 *Helminths in Bile Ducts. (Ascaridi nei dotti biliari.) A. Dalla Valle.

April 22, No. 32, pp. 497-512

61 *Alcohol in Surgery. A. Pellegrini.

59. **Gastric Psychoneuroses.**—Calligaris thinks that clinicians are too apt to regard the majority of stomach affections too exclusively as symptomatic, while the neurologists regard

them exclusively as purely functional and of psychic origin. The treatment of these two extremes is exactly opposite, and woe betide the nervous dyspeptic who falls into the hands of a clinician who disregards the nervous element or, vice versa, the patient with organic trouble whose precious time is wasted on psychotherapy alone. Calligaris classifies gastric neuroses in two types: the false, symptomatic or secondary, and the true, the essential or primary neurosis of the stomach. The history of this latter type is scarcely fifty years old. The symptomatology is rich indeed. The kaleidoscopic picture is the chief point in differentiation. Generally there are both sensory and motor symptoms. Vomiting may occur in this type but the possibility of hematemesis of purely nervous origin is generally denied. Calligaris is convinced that this denial should not be too absolute, but he does not believe in the possibility of an exclusively gastric neurasthenia.

The examination of the stomach should be done with extreme caution and tact to refrain from suggestion that may add new features to the clinical picture. Organic trouble should be suggested more readily if the patient is near or past 50. A purely functional stomach trouble may lead to an organic affection, thus setting up a grave vicious circle. There is no doubt that certain patients with true gastric neuroses have recovered under courses of dieting and medicines, but there is also no question of doubt that hosts of others have had their gastric neurosis bred into a chronic and possibly an incurable phase by such measures.

He has had opportunity to study fifty individuals with true gastric neuroses. It was easy to trace the relation between cause and effect, between emotions, phobias, autosuggestion and suggestion from others, and the development of the neurosis, to follow day by day and hour by hour the course of the symptoms from the stomach as they paralleled the fluctuations in the moods and emotions, and to note the regular transient aggravation of the neurosis after certain happenings and the rapid and progressive improvement under psychotherapy. Disturbances in secretion, motor functioning and sensation, in patients growing more and more debilitated, disappeared surprisingly fast under appropriate psychotherapy, and the downward trend toward mental anorexia was thus arrested. Some of these patients had long complained of loss of appetite with inability to eat, and had lost from 20 to 33 pounds, but under eight or ten weeks of isolation and psychotherapy, they regained strength and almost their former weight. The outcome confirmed the correctness of the diagnosis and treatment; if treatment had been on the basis of an assumed organic trouble, the old disturbances would have been kept alight or fanned into a flame. It is in these cases that "local treatment kills; general treatment saves." Both Dubois and Dejerine believe that fully four-fifths of dyspeptic disturbances are of purely nervous origin. Even reducing this figure by one-half, leaves a large number of which this is certainly true. They owe their origin to some emotional stress or to suggestion from within or without, and mostly to suggestion from some medical treatment which fixes the gastric neurosis still more firmly in the patient's mind, by the questions asked, repeated examination, restrictions in the diet, and polypharmacy. "There are stomachs for the chemists and the radiologists and also for the psychologists, the psychiatrists and the neurologists," he adds. "Nature presents her phenomena with a thousand aspects but man is liable to see only the one aspect which his eyes have been specially trained to see."

60. **Helminths in the Bile Ducts.**—Dalla Valle gives an illustration of five adult ascarides found plugging three of the bile ducts at necropsy of a man of 26 who had gradually become insane after the age of 18. Others were found in the intestines. The only complication noted had been the stasis of bile. There was no tendency to cholelithiasis.

61. **Alcohol for Surgical Use.**—Pellegrini extols the advantages of alcohol for sterilization of the hands, etc., especially the denatured alcohol now supplied the hospitals in Italy. The denaturing is done with benzol and picric acid, and the product thus obtained has several points of superiority over alcohol denatured by other methods.

Pediatria, Naples

April, XXIII, No. 4, pp. 241-320

62 *Treatment of Kala-Azar. A. Castellani.
63 *Is Epinephrin Present in the Blood at Birth? (Sulla presenza di adrenalina nel sangue del neonato.) S. Cannata.
64 Protective Principles in the Milk of Two Cows Immunized against Tuberculosis. (Sulla presenza di principi difensivi nel latte di animali immunizzati contro la tubercolosi.) L. Sivori.
65 Total Symphysis of Extremely Enlarged Heart in Child. (Condizione cardiaca non commune.) M. Penticaccia.
66 Secondary Infections in Tuberculous Children and Their Extreme Gravity for the Prognosis. G. Repaci.

62. **Tartar Emetic in Kala-Azar.**—Castellani reports remarkable benefit, amounting to a practical cure, in a coolie from India with advanced kala-azar, treated with a mixture of tartar emetic, potassium iodid, and sodium salicylate and bicarbonate. He was also given about every tenth day an intravenous injection of the tartar emetic, alone or with Fowler's solution, but Castellani is convinced that the tartar emetic was predominantly responsible for the benefit derived.

63. **No Epinephrin in the Blood of the Newly Born.**—Cannata obtained constantly negative results in thirty-one healthy babes whose serum was tested for epinephrin by various technics.

Policlinico, Rome

April, XXII, Medical Section, No. 4, pp. 145-192

67 *Salvarsan in Treatment of Syphilis Associated with Internal Disease. (Controindicazioni ed indicazioni all'uso dell'arsenobenzolo nelle malattie mediche da sifilide.) T. Pontano. To be continued.
68 Clinical Experiences with Atophan. P. Biffis.
69 *Action of Animal Charcoal on Peptic Digestion. M. Divella.

April, Surgical Section, No. 4, pp. 157-208

70 *Prognosis and Treatment of Tuberculosis of the Tongue. L. Stropeni.
71 Forking Ureter with Movable Kidney. G. Beccherle.
72 *Injection of Alcohol into the Spinal Ganglia. A. Chiasserini. Commenced in No. 1.

67. **Contraindications for Salvarsan.**—Pontano affirms on the basis of considerable personal experience and study of the literature, that, if the heart and kidneys are sound, salvarsan is very slightly toxic. This may be accepted also even if the heart and kidneys are not quite sound, but anything pathologic is perfectly compensated. Symptoms of toxic action have been noted in about 15 or 20 per cent. of the cases in which it has been systematically given. The symptoms are slight and transient and testify to a peculiar individual intolerance, not to any special nature of the disease or its localization. Syphilitics with internal disease, whatever its nature, can be given salvarsan without fear provided the heart and kidneys are sound. Insufficiency on the part of either of these organs is an absolute contraindication, and insufficiency of the liver, a relative contraindication.

69. **Influence of Animal Charcoal on Peptic Digestion.**—Divella experimented with bone charcoal mixed with the mucosa taken fresh from the stomach of a pig or dog, and ground in a mortar. He found that the digestion was materially accelerated by the charcoal admixture in a proportion of 22.05 per cent. Larger or smaller proportions were far less effectual. In the presence of a poisonous substance, strychnin, arsenic, etc., digestion proceeded much more effectually with the charcoal than without. He ascribes its favorable influence to adsorption of the poisons and of ferments, etc., that tend to inhibit digestion. The conclusion seems evident, he adds, that animal charcoal will prove beneficial in all cases of gastric dyspepsia, abnormal fermentations or bad breath, in short, whenever digestion in the stomach is deranged from any cause.

70. **Tuberculosis of the Tongue.**—Stropeni comments on the remarkable rarity of tuberculous lesions in the tongue. It seems to indicate unusual resisting power on the part of the tongue tissues. Hence the prognosis is bad when a secondary process develops in the tongue as this is a sign that the general resisting power is at a low ebb. In twenty-nine cases on record the tuberculous lesion in the tongue was mistakenly assumed to be cancer, and extensive mutilating operations were done. Rapid and fatal recurrence followed in most of the cases, and signs of tuberculosis in other organs showed that the tongue affection had been a secondary process, the

system already undermined. A primary tuberculous process in the tongue is a different matter, and a complete cure is the rule after thorough excision of the focus. Curetting and cauterization are inadequate; in advanced cases, roentgenotherapy may be preferable to excision. The focus should always be removed also with a secondary lesion unless the lungs are involved. When this is the case, roentgenotherapy is better. Stropeni gives references to recent literature on tuberculosis of the tongue, including fourteen Italian and fourteen German works and only three from English literature.

His attention was called to the subject by a case of apparently primary tuberculosis of the tongue in a robust man of 33. A hard, whitish bunch developed on the frenulum, where it joins the base of the tongue. It soon ulcerated and was very painful. After two months of household remedies, he entered the hospital where mercurial treatment was instituted, notwithstanding the negative Wassermann, and the lesion was repeatedly cauterized. Under three months of this the ulceration grew worse and worse, the neighboring glands became involved and suppurated, with fistulas. Then the tuberculin skin tests and inoculation of guinea-pigs with pus gave positive reactions but no tubercle bacilli could be detected in the sputum. Treatment was then changed to merely rinsing out the mouth with mild boric acid solution, and the angry lesions retrogressed to some extent, one fistula healing. The ulcerations on the tongue were then exposed to the Roentgen rays and benefit was apparent almost at once. Eight sittings were given in the course of a month, under which the tongue affection healed smoothly and completely. The patch of swollen glands in the neck was then excised as the suppuration kept up. The cure was then complete and there have been no signs of recurrence during the six months since and the man feels entirely well.

72. **Injection of Alcohol into the Spinal Ganglia.**—Chiasserini concludes his monograph with references to 159 articles, including several in THE JOURNAL. He has studied the technic on dogs and on cadavers, and declares that it is possible and practicable to interrupt, by injection of alcohol into the spinal ganglion, the reflex arc responsible for a number of morbid syndromes and, in particular, for the gastric and intestinal crises in tabes. The technic is simple and easy, he declares, and it promises to be entirely harmless. Even if the alcohol does not get inside the ganglion, and the injection is thus merely periganglionic, it probably will block the nerve to a certain extent. He gives illustrations of the surgical anatomy and the technic he found best adapted for the purpose.

Riforma Medica, Naples

April 17, XXXI, No. 16, pp. 421-448

73 *Serodiagnosis and Serotherapy of Disturbance from Loss of Balance in Ductless Gland System. (Sul valore dei sieri citotossici nelle malattie da alterato equilibrio endocrino.) G. Costantini and L. Sivori. Commenced in No. 15.

74 Cysts in the Pancreas. L. Eustachio.

75 *Oxygen and Carbon Dioxid in the Blood in Uremia. (L'ossigeno e l'anidride carbonica nel sargue degli uricemici.) L. Preti.

73. **Cytotoxic Serums in Treatment of Exophthalmic Goiter, etc.**—This experimental research was done at the Genoa university clinic in charge of Maragliano. It was based on the fact that in animals treated systematically with the extract of an organ their serum acquires in time a destructive action on the cells of the organ in question. Cytotoxic serums were thus obtained for the thyroid and suprarenals. It seems a plausible assumption that a serum endowed with a destructive action on the thyroid would aid in reducing symptoms caused by excessive functioning on the part of the thyroid. Test tube experiments in this line gave encouraging results: mixing with 1 c.c. of the patient's serum the amount of cytotoxic serum known to neutralize the minimal lethal dose of thyroid extract, then adding one drop of an alexin and incubating for an hour, then adding the minimal lethal dose of thyroid extract and one more drop of alexin and incubating for another hour. This mixture then injected into a rabbit's vein promptly kills the animal if the patient in question is suffering from hyperthyroidism, while it does not harm the animal if there is hypothyroidism. The mechanism of this is explained and the method suggested as useful for differential diagnosis.

Also in treatment of hyperthyroidism, the cytotoxic serum would have the effect of binding the excess of thyroid principles in the blood. Its action would thus be analogous to that of the serum of thyroidectomized animals, now often used in treatment of exophthalmic goiter. The blood of these thyroidectomized animals contains all the principles which normally are neutralized by the thyroid gland. Cytotoxic rabbit serum in treatment of exophthalmic goiter was given a trial at the clinic in 1911 in one case, but the supply of the prepared serum ran out in two weeks, and the attempt had to be abandoned. All the evidence so far obtained speaks strongly in favor of the possible utilization of cytotoxic serums in exophthalmic goiter. The other ductless glands can scarcely be considered in this respect as they cannot be spared from the body like the thyroid.

75. **Oxygen and Carbon Dioxid in the Blood in Uricacidemia.**—Preti recalls that an aqueous extract of liver tissue has the power to destroy uric acid added to it in the presence of oxygen. The uric acid is reformed if the oxygen is replaced by carbon dioxid. Preti and other Italian workers have reproduced these phenomena with artificial circulation through the liver, first oxygenating the blood, to destroy the uric acid, and then reforming it with the aid of carbon dioxid. Preti's further research has shown that both the phenomena are the work of ferments in the blood. Animals breathing air with much carbon dioxid eliminate larger quantities of uric acid through the kidneys, and the uric-acid content of the blood is higher. Recent investigation of twelve persons with attacks of gout, tophi and high uric-acid content in the blood, showed from 5 to 18 per cent. oxygen in the blood, the majority approximating the lower figure. The carbon dioxid content was never found less than 50 per cent., the range being from 51 to 76 per cent. In the healthy controls, the oxygen range was from 16 to 23 per cent. and the carbon dioxid from 38 to 44 per cent. These findings throw light on the familiar experience that gout affects persons with defective oxidations owing to a sedentary life, muscular inanition, depression of the heart action, etc.

Ugeskrift for Læger, Copenhagen

April 15, LXXVII, No. 15, pp. 577-596

76 Extraction of Tack Two Years in Lung. (Et Tilfaelde af Corp. alien. pulmon. c. abscessu mediastini.) K. Schäffer.

April 22, No. 16, pp. 597-636

77 *Continuous Extension in Treatment of Sciatica. I. Svindt.

77. **Extension Treatment of Sciatica.**—Svindt has applied extension, as for a fracture of the neck of the femur, in 26 of the 41 cases of sciatica in his service in the last five years. The youngest patient was 22, the oldest 74, and the extension relieved them of their pain and in most cases led to a permanent cure. The extension was kept up for about three weeks, and was followed by massage and hydrotherapeutic measures for another week or ten days, to complete the cure. The average stay in the hospital for the 41 patients was forty-four days, but extension was applied only in the severest cases. In one case since there was recurrence of the sciatica about six weeks afterward, but another course of extension treatment at home cured him and there has been no trouble since. Only one other patient reports recurrence of the sciatica; it has returned several times but always in such mild form that it has not interfered with his occupation. Svindt's experience on the whole has thus been very favorable with this extension method of treating sciatica. The technic is so simple that any practitioner can apply it. The relief from pain and the permanent benefit are probably due to the complete rest of the limb and the musculature. It is not probable that the extension applied is enough to really stretch the nerve. He begins with a weight of 4 kg., gradually increasing it to 7 or 8 kg. The last trace of pain generally subsides when a weight of 7 kg. is reached (15.4 lb.) He gives a sedative the first day or so if absolutely required, and follows with salicylates for a few days, with a fever diet and then a full diet.